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#61 Appeal brief  
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF APPEALS AND INTERFERENCES

In re Application of:

Appeal No. \_\_\_\_\_

RICHARD G. HYATT, JR.

Serial No.: 08/720,070

Examiner: BARRETT, SUZANNE D.

Filed: 17<sup>th</sup> of September 1996

Art Unit: 3676

For: ELECTROMECHANICAL CYLINDER PLUG

Attn: Board of Patent Appeals & Interferences

APPEAL BRIEF

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Pursuant to Appellant's Notice of Appeal filed on 3 December 2003, Appellant hereby appeals to the Board of Patent Appeals and Interferences from the final rejection of claims 1-24, 34-38, 46-52, 54, 56, 64-70, 75-77, 85, 88-106, 108, 109, 111-116, and 119-121.

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**I. REAL PARTY IN INTEREST**

Pursuant to 37 CFR §1.192(c)(1)(as amended), the real party in interest is:

Richard G. Hyatt, Jr.,

the sole inventor of the subject matter defined by the pending claims.

**II. RELATED APPEALS AND INTERFERENCES**

There are no other appeals and no interferences known to Appellant, Appellant's legal representatives or the assignee which will directly affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

**III. STATUS OF CLAIMS**

Claims 25-33, 39-42, 55, 78-84 and 107 are allowed. Claims 53, 71, 72, 74, 86, 87 and 110 are objected to. Claims 1-24, 34-38, 46-52, 54, 56, 64-70, 75-77, 85, 88-106, 108, 109, 111-116, 119-121 are rejected and claims 43-45, 73 and 94 are withdrawn from consideration. Claims 57-63, 117 and 118 were previously canceled, and claims 85-89 have been canceled in the Amendment under 37 C.F.R. §1.116(b) concurrently submitted with this Appeal Brief.

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**IV. STATUS OF AMENDMENTS**

No claim amendments were made prior to filing of the present Appeal Brief. Amendment under 37 C.F.R. §1.116(b) is being concurrently submitted with the present Appeal Brief. The claim amendments set forth in the Amendment under 37 C.F.R. §1.116(b) filed with this Appeal Brief have

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been incorporated into Appendix II. In the Amendment under 37 C.F.R. §1.116(b), claims 85-89 have been canceled without prejudice or disclaimer, and claims 1, 6, 11, 14, 21-24, 65, 70, 75, 92, 101, 102, and 121 are amended.

## V. SUMMARY OF INVENTION

Referring to Figure 1 through 12 collectively, and page 10 of the specification, Appellant discloses a hierarchically adaptable lock 100 by using a removable cylindrical plug 101 that is rotatably held with a lock cylinder 102 of a locking mechanism. The plug has an exposed terminal face base 72 perforated by a keyway 101a and a distinct electrical contact aperture 104x. The plug 101 contains either a mechanical locking mechanism, such as a rekeyable tumbler stack 82, and an electrical operator 105, 106, 107, 108, or simply a key retaining mechanism and an electrical operator 105, 106, 107, 108, wholly within the cylindrical exterior surface of the plug 101. The opposite base of the plug operationally supports a tailpiece 101g able to rotate a cam 103 and position a bolt of the locking mechanism. Referring additionally to Figure 18, after insertion of a blade of a properly bitted and profiled key 200, electrical power from battery 202, or alternatively electrical power and a data signal from the signal generator superimposed upon the electrical power, may be transmitted from electrical circuits of the key to the electrical operator 106b within the plug 101. Activation of the electrical operator 105, 106, 107, 108 within the plug 101, in conjunction with correct displacement of the mechanical locking mechanism, or in the embodiments constructed without a mechanical locking mechanism, simply activation of the electrical operator 105, 106, 107, 108, enables rotation of plug 101 within the bore of cylinder 102 as torque is manually applied to

the blade of the key 200. An electronic memory ROM, or an electronic memory ROM and an electronic logic circuit  $\mu$ P wholly contained within the plug, may be electrically interposed between the electrical operator and the electrical contacts 104x receiving power, or power and data signals, from the key 200.

## VII. GROUPING OF THE CLAIMS

### Grouping of the Claims

As confirmed by Paper No. 37, a *Corrected Decision On Petition* pursuant to 37 CFR §1.144, the instant Application discloses numerous species; several of those species are covered by the questions about the propriety of the final rejections of the claims now before the Board. These species have several features, characteristics and modes of operation, and each claim was separately rejected in Paper Nos. 39 and 53. Paper Nos. 39 and 53 present but a single rejection of each claim. Consequently, the issues of patentability are particular to each claim, and each claim therefore, must stand or fall individually on the specific issue of patentability, independently of any other claim.

## VIII. ARGUMENT

### Rejection Of Claims 11-13, 90 & 120 Under First Paragraph Of 35 U.S.C. §112

Claims 11 through 13, 90 and 120 were rejected under the first paragraph of 35 U.S.C. §112, with an averment that Appellant's specification failed to satisfy the enablement requirement of the first paragraph of 35 U.S.C. §112. The rejection is improper for the following reasons.

### **Claims 11-13**

The Examiner correctly noted that claim 11 contained a typographic error, namely the phrase “distal member” was repeated twice. The fact that Appellant does satisfy both the written description and enablement prongs of the first paragraph of 35 U.S.C. §112 by describing how to make and use a “distal member” of Appellant “electrical operator”, as illustrated in at least three embodiments on 106(a), 107(a) and 108(a) in Figure 1, makes this rejection improper under the “enablement” requirement of the first paragraph, despite that fact that claim 11 may be indefinite due to the typographical error. The error has been corrected in Appellant’s Amendment filed simultaneously herewith. Appellant notes however, that there is no rejection under the second paragraph of §112 of claim 11 in the record before the Board. Consequently, in view of the satisfaction of the requirement for enablement of the phrase “distal member”, this rejection may not be sustained under the first paragraph of §112.

### **Claims 90 and 120**

First, Appellant notes that Paper No. 53 contains various assertions that infer that the use of the phrase *at least one*<sup>1</sup> in the Field, *et al.* ‘307 patent means *a plurality* or *more than one*. The Examiner has cited no authority for this inference. Paper No. 53 has failed to demonstrate that the phrase *at least one*<sup>2</sup> as used in the Field, *et al.* ‘307 patent defines any number other than *one*. The

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<sup>1</sup> Claim 1 of Field, *et al.* ‘307 reads, in part, “wherein *at least one* electromechanical locking member is disposed within the barrel ... .” Column 9, lines 5 and 6.

<sup>2</sup> Claim 1 of Field, *et al.* ‘307, column 9, lines 5 and 6.

Examiner's attention of is invited to the complete absence of authority for the Examiner's proposition that the phrase *at least one* means any number other than *one*. The Examiner's attention is also invited to Appellant's Figure 1 which displays an array of at least three electromechanical locking members 106a, 107a and 108a, all of which satisfy the definition of a locking member given by Field, *et al.* '307 in column 5, lines 1 through 8, and all or any one of which might be borne by Appellant's array of apertures 80, 82.

**Second**, Paper No. 53 also states that,

“the instant specification fails to provide support for the “at least one electromechanical locking member”<sup>3</sup>

The Examiner's attention is invited to the fact that the Office has long since ruled that Appellant's armature spring constituted an “electrical operator”, and to explain in a supplemental to Paper No. 52, the difference between an “electrical operator” and an “electromechanical locking member.

**Third**, the Examiner's attention is invited to the description of the *electromechanical locking member* given by Field, *et al.* '307:

“[a] plurality of electromechanical locking members 50, 52, 54 preferably are located within the central recess portion 42. The locking members are referred to as electroomechanical because, as described below, there are moved under the force of an electronically powered drive mechanism.”<sup>4</sup>

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<sup>3</sup> Paper No. 53, page 2, paragraph 3.

<sup>4</sup> Field, *et al.* '307, col. 5, lines 65 through 67, and col. 6, lines 1 and 2.

Wholly absent from Field, *et al.* '307 is any attribution of any electromechanical characteristic or property to elements 50, 52, 54; Field, *et al.* '307 describes elements 50, 52, 54 as a passive element. In contradistinction, Appellant's locking pin 201a is disclosed as a mechanical component made of a ferromagnetic material such as iron, that is moved under the force created by an electronically powered drive mechanism, namely coil 201b. Alternatively, Appellant's "armature 106a"<sup>5</sup> contains at least one of the "grooves or slots 51, 53, 55" attributed by Field, *et al.* '307 to his "locking members 50, 52, 54."<sup>6</sup> Wholly absent from Paper No. 52 is any explanation of why slots 51, 53, 55 in Field, *et al.* '307 convert each of elements 50, 52, 54 into "at least one electromechanical locking member", while slots 107c, 108h and grooves 105n of Appellant's electromechanical components 105D, 106a, 107a and 108a do not similarly convert Appellant's electromechanical components into "electromechanical locking members", when Appellant's electromechanical components 105D, 106a, 107a and 108a are disclosed as responding to an electrically driven motor or solenoid by exhibiting movement relative to a detent, or to a sidebar, or other obstruction?

Absent any basis for the Examiner's inference<sup>7</sup>, paper No. 52 fails to satisfy the standard required under 37 CFR §1.104, and is incomplete to the extent that Appellant can not reasonably and accurately comply with the requirement for a Request under 37 CFR §1.607. Accordingly, and in compliance with 37 CFR §1.104(a) and (b), Appellant has previously requested a supplemental to

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<sup>5</sup> Shown in Figures 2 and 3.

<sup>6</sup> Field, *et al.* '307, col. 5, lines 5 and 6.

<sup>7</sup> See, for example, Paper No. 53, paragraph 3.

Paper No. 53, containing:

- An explanation of the meaning of the phrase *at least one*.
- Identification of authority that establishes that the phrase *at least one* indicates a number greater than one under the second paragraph of 35 U.S.C. §112.
- Identification of authority that supports the Examiner's explanation in the supplemental Paper No. 53 of the meaning of the phrase *at least one* stated by the Examiner.
- A written explanation of the difference between an "electricomechanical locking member" and Appellant's "armatures" and "locking pins", as those terms pertain to this application.
- A written identification of the column and line number of Field, *et al.* '307 giving an explanation of any *electromechanical* property and characteristic of elements 50, 52 and 54 that defines a difference between an "electrical element", as those terms pertain to this application.
- A written explanation by the Examiner of why slots 51, 53, 55 in Field, *et al.* '307 convert each of elements 50, 52, 54 into "at least one electromechanical locking member", while slots 107c, 108h and grooves 105n of Appellant's electromechanical components 105D, 106a, 107a and 108a do not similarly convert Appellant's electromechanical components into "electromechanical locking members", when Appellant's electromechanical components 105D, 106a, 107a and 108a are disclosed as responding to an electrically driven motor or solenoid by exhibiting movement relative to a detent, or to a sidebar, or other obstruction?

These requested items of clarification have not been forthcoming; consequently, the record before the Board establishes that the Examiner has impermissibly failed to recognize that the record before the Board establishes that more than one art-recognized noun may be used to describe features and components disclosed in Appellant's application. In view of the foregoing explanation and demonstration of enablement under the first paragraph of 35 U.S.C. §112, these rejections should not be sustained.



**Rejection Of Claims 1-5, 11-13, 34, 65-69, 75, 85, 89, 92-104, 112  
& 121 Under Doctrine Of Obviousness Type Double Patenting**

Claims 1 through 5, 11 through 13, 34, 65 through 69, 75, 85, 89, 92 through 104, 112 and 121 were rejected under the doctrine of obviousness type double patenting. With respect to claims 1 through 5, 11 through 13, 85 and 89, this rejection is improper, and may not be sustained.

**Claims 1 through 5**

In support of the rejection, the Examiner asserts that “the conflicting claims are not identical, they are not patentably distinct from each other because they merely recite like elements using different terminology and/or phraseology such as ‘detent’ instead of ‘bar’.” It is noted that claims 1 and 11 recite a “detent”, but not a “stationary detent”, and thus side bar detent of the patent reads on this limitation. The Examiner has misinterpreted the basis for the Election of Species detailed in Paper No. 37, the corrected Decision on Petition. Independent claim 1, by way of example, defines “an electrical operator ... obstructing said relative movement *by engaging a detent protruding from the cylinder.*” Appellant notes that claim 1 already defines a “side bar” and this “detent” is defined as “protruding from the cylinder”, rather than protruding from some other object. The attention of the Board is directed to the embodiments of the species including Figure 1, where detents 106A, 107A are borne by cylinder 102, rather than by plug 101. None of claims 1 through 78 set forth in the Appellant’s later filed U.S. 6,564,601 defines these features. Consequently, the Examiner’s assertion that the claims defer in terminology of phraseology is misplaced. These features are wholly absent from the claims set forth in Appellant’s ‘601 patent. Consequently, and recognizing the inability of

Paper No. 53 to identify the features in any of the issued claims, this rejection may not be sustained.

**Claims 11 through 13**

Independent claim 11 defines, *inter alia*, “an electrical operator ... obstructing said relative movement when said distal member at least partially surrounds ... .” This feature defines the electrical operator with features such as those illustrated in Figure 1 by 106a, 107a and 108a. In contradistinction, the claims of Appellant’s ‘601 patent nowhere define these features and functional operations. The complete absence of any allegation in Paper No. 53 that any particular claims in ‘601 contain such features, is convincing evidence of absence of obviousness-type double patenting. The Board is respectfully requested to refuse to sustain this rejection.

**Rejection Of Claims 46-52, 54, 56, 64, 70, 76, 77, 85, 88-91, 105, 108, 109, 111, 113-116, 119, 120 An 121 Under 35 U.S.C. §103(a)**

Claims 46 through 52, 54, 56, 64, 70, 76, 77, 85, 88 through 91, 105, 108, 109, 111, 113 through 116, 119, 120 were rejected under 35 U.S.C. §103(a) as rendered obvious, and unpatentable, by the Examiner’s proposed combination of Gokcebay U.S. 5.552.777 modified according to Thordmark U.S. 5.542.274 and Naveda U.S. 4.416.127. This proposed combination is improbable, is unsupported by any evidence of motivation in the record before the Board, and fails to provide a *prima facie* showing of obviousness; the Board is respectfully urged to refuse to sustain this rejection for the following reasons.

**The Rejection Under 35 U.S.C. §103 Fails To Make A *Prima Facie* Showing Of Obviousness**

According to MPEP 706.02(j), the following establishes a *prima facie* case of obviousness under 35 U.S.C. §103:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on Appellant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The Examiner has recognized that the combination including Gokcebay '777 fails to either teach or suggest:

“a bar/detent which moves radially to the axis of the plug and the electronic operator having an electronic locking member which moves independently of the movement of the bar/detent which is reciprocated between a blocking and releasing position as a result of independent movement of the locking member.”

The Examiner subsequently concludes however, that:

“[i]t would have been obvious ... to replace the simple blocking element of Gokcebay with the multipart electrically actuated blocking element of Thordmark et al to thwart natural attempts to force system locks ... [i]t would have further been an obvious reversal of parts and change of size to select miniature logic circuitry and a miniature solenoid and locking member 11 such that the blocking mechanism fits with a conventional sized lock plug as taught by Gokcebay and

Naveda.”

Entirely ignored by the Examiner’s proposed combination is that Appellant’s claims 46 through 52 define “a bar borne by said plug and rotatable with said plug relative to said shell”, while claim 56 defines “a shell containing a hollow recess ... [and] an elongate member interposed between said shell and said plug ... in reponse to a torque that is externally applied to said plug and causes rotation ... exiting said recess”<sup>8</sup> while a comparable feature is defined by dependent claim 119, and claim 64 defines “a sidebar ... to travel generally along a radial plane ... [and] an electrical operator ... moving in a different plane independently of said travel by said sidebar”<sup>9</sup> and claim 105 defines “orienting said side bar to travel along a plane ... [and] positioning said locking member to move on an axis that is approximately perpendicular to said plane.”<sup>10</sup> Moreover, claim 70 defines “a bar ... to travel generally along a radial plane ... [and] an electrical operator borne by said cylinder plug ... moving

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<sup>8</sup> Despite the requirement of 37 CFR §1.104(b)(2) for identifying the “particular part” relied upon to support a rejection, Paper Nos. 39 and 53 are silent upon these details. It appears that in the proposed combination including the second “elongate member” 10, or even 11 of Thordmark ‘274, that second “elongate member” 10, or 11 must necessarily remain with the recess, or bore, provided by the outer shell of the lock in order for the cylinder plug to rotate. This is contrary to Appellant’s claims, and prevents a true retro-fit of a lock cylinder without also a concomitant re-machining, or complete replacement of the outer shell. Moreover, this combination fails to meet the express language of claim 56.

<sup>9</sup> Again, Papers Nos. 39 and 53 pay no moment to the requirement of 37 CFR §1.104(b)(2) for identifying the “particular part” relied upon to support a rejection. In the proposed combination including Thordmark ‘274, the second “sidebar” 10 must necessarily move with the identical same plane as solenoid 17 (in Fig. 7) or motor 12 (in Figs. 3, 4 and 5), contrary to the express teaching of Appellant’s claim 64.

<sup>10</sup> In the proposed combination including Thordmark ‘274, the second “sidebar” 10 must necessarily move within the identical same plane as solenoid 17 (in Fig. 7) or motor 12 (in Figs. 3, 4 and 5), contrary to the express teaching of Appellant’s claim 64.

along a geometric construct *other than* to said radial plane ... .”<sup>11</sup> Even ignoring *arguendo* that the primary reference is singularly devoid of any structure forbearing a detent, sidebar or bar, and that the Examiner’s proposed combination would impermissibly prevent the primary reference from operating in its intended mode of operation by obstructing the ability of the “block pin 38” of “small solenoid 36” of the primary reference to engage its cylinder shell 46, the Examiner’s proposed combination lacks teaching or suggestion of claim 46’s “bar borne by said plug and rotatable with said plug relative to said shell”, claim 56’s (and a similar feature defined by claim 119) “shell containing a hollow recess ... [and] an elongate member interposed between said shell and said plug ... in reponse to a torque that is externally applied to said plug and causes rotation ... exiting said recess”<sup>12</sup>, claim 64’s “sidebar ... to travel generally along a radial plane ... [and] an electrical operator ... moving in a different plane independently of said travel by said sidebar”<sup>13</sup>, and claim 70’s “bar ... to travel generally along a radial plane ... [and] an electrical operator borneby said cylinder plug ... moving along a geometric construct *other than* to said radial plane ...”; consequently the Examiner’s proposed combination fails to make a *prima facie* showing of obviousness as is required by the third

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<sup>11</sup> In the proposed combination including Thordmark ‘274, the second “sidebar” 10 must necessarily move within the identical same plane as solenoid 17 (in Fig. 7) or motor 12 (in Figs. 3, 4 and 5), contrary to the express teaching of Appellant’s claim 105.

<sup>12</sup> In the proposed combination including the second “elongate member” 10, or even 11 of Thordmark ‘274, that second “elongate member” 10, or 11 must necessarily remain with the recess, or bore, provided by the outer shell of the lock in order for the cylinder plug to rotate. This is contrary to Appellant’s claims, and prevents a true retro-fit of a lock cylinder without also a concomitant re-machining, or complete replacement of the outer shell. Moreover, this combination fails to meet the express language of claim 56.

<sup>13</sup> In the proposed combination including Thordmark ‘274, the second “sidebar” 10 must necessarily move within the identical same plane as solenoid 17 (in Fig. 7) or motor 12 (in Figs. 3, 4 and 5), contrary to the express teaching of Appellant’s claim 64.

criteria of the *MPEP* §706.02(j).<sup>14</sup>

The attention of the Board is invited to note that in the Examiner's proposed combination, the interposition of a "detent", "sidebar" or "elongate bar" between the solenoid of the primary reference and the cylinder shell would impermissibly prevent the primary reference from being operated in its intended mode of operation with the solenoid 36 moving a "blocking pin 38"<sup>15</sup> engaging<sup>16</sup> "a bore or recess 50"<sup>17</sup> in the cylinder shell; these features with "an elongate bar ... interposed between said shell and said cylinder plug" are expressly defined by Appellant's claims 76, 77, 85,<sup>18</sup> 89, 90, 91. Consequently, this rejection is based upon an impermissible modification of the primary reference, and may not be maintained.

Furthermore, the earlier noted fact that the Examiner's proposed modification of the primary reference would prevent the primary reference from being operated in its intended mode of operation, is itself convincing *indicia* of the non-obviousness of these claims.<sup>19</sup>

Fourth, there is no evidence of record for modifying the primary reference in the manner

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<sup>14</sup> Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *MPEP* §706.02(j).

<sup>15</sup> Gockebay '777, column 6, line 46.

<sup>16</sup> Gockebay '777, column 6, lines 45 and 46, " Fig 3, show[s] a bore or recess 50 into which the blocking pin 38 extends in the blocking position."

<sup>17</sup> Column 6, line 49.

<sup>18</sup> Claim 85 defines "a side bar cooperating between the shell and the barrel ... ."

<sup>19</sup> The Examiner's proposed combination would impermissibly prevent the primary reference from operating in its intended mode of operation by obstructing the ability of the "block pin 38" of "small solenoid 36" of the primary reference to engage its cylinder shell 46.

asserted by the Examiner, except through a hindsight reconstruction of the art in the light provided by Appellant alone. In the Examiner's proposed combination, only Thordmark274 discloses a movable locking member cooperating with any electrical operator; that movable locking member 11, as well as "latching member 10", is however, borne by the cylinder shell, and not, as defined by Appellant's claims, borne by, or mounted upon, the plug. Naveda '127, which is a rather large case lock, in terms of the physical volume occupied by shell, or housing, of the lock in comparison to the primary reference, is utterly devoid of any cylinder plug, is bereft of a suggestion of a detent or sidebar, and contributes nothing to this proposed modification of the primary reference. In short, there is no evidence of record showing motivation for making the Examiner's proposed combination, and Naveda '127 does nothing to remedy the deficiencies noted in the primary and secondary references.. The Federal Circuit has repeatedly emphasized that:

“[t]he test for obviousness is not whether the features of one reference may be bodily incorporated into another reference...Rather, we look to see whether combined teachings render the claimed subject matter obvious.” *In re Wood*, 599 F.2d 1032, 202 USPQ 171, 174 (CCPA 1979) (citing *In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549-50 (CCPA 1969); *In re Mapelsden*, 329 F.2d 321, 322, 141 USPQ 30, 32 (CCPA 1964).

Here, there is no actual teaching in the Examiner's proposed combination for shifting “a spring biased sidebar 10” anywhere; the primary reference does not require a sidebar and can not fit a sidebar between its blocking pin 38 and its recess 50 without interfering with functional operation, Thordmark '274 already has a “side-bar 7” which has no disclosed relation with its “electronic operator 12”. Absent the requisite evidence of motivation for making the Examiner's proposed

combination, this rejection may not be sustained.<sup>20</sup>

Independent claim 46 defines “a cylinder plug” with, among other features, “a bar borne by said plug ... and an electrical operator ... moving ... to accommodate said movement of said bar ... .” Claims 56, 64, 70, 76, 77, 85, 89, 90, 120 and 120 use alternative language to define other aspects of this feature. In contradistinction, the Examiner’s proposed combination includes a primary reference which requires “a solenoid 36 which is effective *to retract* a blocking pin 38 when energized”<sup>21</sup> in combination with Appellant’s “bore or recess 50 into which the blocking pin extends in the blocking position.”<sup>22</sup> The degree of completeness required by 37 CFR §1.104(b) in Paper No. 8 is unfortunately absent; the Examiner has neglected how the proposed combination can have “solenoid 36” respond to a data signal “by releasing said detent to move” as is required by Appellant’s claim 46, when the primary reference teaches that “solenoid 36” response to application of an electrical current by *holding* “blocking pin 38” in a retracted position when solenoid 36 is “energized”? Despite Appellant’s request in response to Paper No. 39 for clarification under 37 CFR §1.104(a)(b) and (c), no explanation has been forthcoming. Absent the requested clarification, this

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<sup>20</sup> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. ... The teaching or suggestion to make the claimed combination and the reasonable expectation of success ***must both be found in the prior art and not based on Appellant’s disclosure.*** In re Vaack, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Emphasis added.

<sup>21</sup> Gockebay ‘777, column 5, lines 55, 56.

<sup>22</sup> Gockebay ‘777, column 6, lines 45 and 46.



rejection may not be sustained.

Alternatively, if the Examiner has intended to assert that the proposed combination may be constructed with a wholesale substitution of “electrical operator 12, a movable electronic [*sic*] locking member 11” and latch 10 for the primary reference’s “electrical operator 36 ... [and] member 38”, the Examiner’s proposed combination is flawed because it impermissibly prevents the primary reference from operating in its intended mode of operation with “a bore or recess 50 [drilled into, or preferable through cylinder shell 46] into which blocking pin 38 extends in the blocking position” (*i.e.*, to directly and securely engage the cylinder shell) and concomitantly impermissibly prevents the primary reference from retentively holding “blocking pin 38” in a retracted position when energized.<sup>23</sup> There is no evidence of record teaching this construction and concomitant modification of Gokcebay ‘777, except that provided by Appellant’s claims alone among the art.<sup>24</sup> The mandate for completeness in each Office action set forth 37 CFR §1.104(a), (b) and (c) has not been met here because Paper Nos. 39 and 53 fail to explain how the proposed combination might be constructed to preserve the teaching of the primary reference for “a bore or recess 50 [drilled into, or preferable through cylinder

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<sup>23</sup> Under U.S. practice, these teachings of Gockebay ‘777 may not be ignored by the Examiner when constructing the proposed combination. According to MPEP §2141.02, “A prior art reference must be considered in its entirety, *i.e.*, as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). Construction of the Examiner’s proposed combination to eliminate these features of Gockebay ‘777 is improper under 35 U.S.C. §103(a).

<sup>24</sup> The Examiner’s “obvious reversal of parts and change of size to select miniature logic circuitry and a miniature solenoid and locking member 11 such that the blocking mechanism fits with a conventional sized lock plug as taught by Gokcebay and Naveda” is fictitious and illusory, because there is no evidence of record which either teaches or suggest the “obvious reversal.”

shell 46] into which blocking pin 38 extends in the blocking position” (*i.e.*, to directly and securely engage the cylinder shell) and concomitantly impermissibly prevents the primary reference from retentively holding “blocking pin 38” in a retracted position when energized. Clarification is respectfully requested.

Moreover, under 35 U.S.C. §103(a),

“combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor’s disclosure as a blueprint for piecing together the prior art to defeat patentability. *In re Dembiczak*, 175 F.3d 994, 50 USPQ.2d 1614 (Fed. Cir. 1999).

Consequently, this alternative construction is untenable, not only because it impermissibly prevents the primary reference, as modified by the two secondary references, from operating in its intended mode of operation, but also because neither of the two secondary references provide the specific motivation to construct Appellant’s “a plug” with, among other features, “a detent disposed between said plug and a cylinder ... an electrical operator borne by ... and rotating with said plug ... releasing said detent to move ... .” Given this failure of a *prima facie* requisite showing of the obviousness under the criteria of §706.02(j) of the *Manual*,<sup>25</sup> the Board is respectfully requested to refuse to sustain this rejection.

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<sup>25</sup> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. ... The teaching or suggestion to make the claimed combination ... ***must ... be found in the prior art and not based on Appellant’s disclosure.*** *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

**Claim 90 And 12**

Independent process claims 90 defines a process of “retrofitting a mechanical cylinder lock to form an electromechanical cylinder lock”. The Examiner’s proposed combination requires a “recess or bore 50” in order to meet the express teachings of the primary reference, namely that:

“this bore, recess or groove 50 is the only modification *required* in the entire lock ... the bore or recess 50 is *easily formed* by drilling a hole through the cylinder shell or forming an internal recess or groove on the inside surface of the cylinder shell”<sup>26</sup>

Appellant’s process neither uses nor requires a modification of the shell to accommodate the process of rejected claim 90. Recognizing that the Examiner’s modification of the primary reference in a manner which prevents the operation of the primary reference in its intended mode, is impermissible, not only is there no evidence of motivation in the record to support the Examiner’s proposed process, but the fact that Appellant’s process advantageously eliminates this awkward step of first removing, and then drilling the cylinder shell, if further evidence of non-obviousness of the processes of claim 90. Given this evidence, and the advantageous results flowing therefrom, claim 90 is allowable over the prior art.

**Claim 46**

Claim 46 was rejected under 35 U.S.C. §103(a) as rendered obvious by proposed combination of Gokcebay '777 modified according to the Thordmark U.S. 5,542,274 in view of Naveda U.S.

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<sup>26</sup> Gockebay '777, column 46 - 51; column 6, lines 45 and 46 states that “ Fig 3, show[s] a bore or recess 50 into which the blocking pin 38 extends in the blocking position.”

4,416,127. Appellant respectfully traverses this rejection for the following reasons.

**First**, the lock defined by claim 46 has a “bar borne by said plug ... interposed between said shell and said cylinder plug to reciprocate generally along a radial plane” in combination with “an electrical operator ... obstructing movement of said bar ... in response to a first state of said control signal and by moving within a second and different plane not coextensive with said radial plane in response to application of said control signal ... .” The Examiner neglected to explain how movement in different planes could be obtained by the proposed combination; in fact, all movement in the proposed combination exists within the same plane. That is, how can the Examiner’s proposed combination be configured so that moveable coil 17 and blocking element 11 of Thordmark ‘274 move along non-aligned planes, a feature that provides a mechanical advantage and heightened security that is not available with the proposed combination. Accordingly, there is no *prima facie* showing of obviousness, and claim 46 is readily patentably distinguishable over the prior art.

**Second**, and as earlier noted, Appellant’s lock defined by claim 46 has a “bar borne by said plug ... interposed between said shell and said cylinder plug to reciprocate generally along a radial plane” in combination with “an electrical operator ... obstructing movement of said bar ... in response to a first state of said control signal and by moving within a second and different plane not coextensive with said radial plane in response to application of said control signal ... .” This feature is wholly absent from the Examiner’s proposed combination because the modification of Gokcebay ‘777 made by the Examiner has a “latching element 10, therewith enabling the latching element [10 of the proposed combination] to be pressed *radially outwards as the plug 3 is turned with the key 4.*” Thordmark ‘274, col. 5, lines 24-26. Whether by some force of magic or by simple hindsight

reconstruction of the art, if moving coil 17 is somehow incorporated into cylinder plug 24 of Gokcebay '777, that same radially outward motion will remain as a constant. The fact that latching member 10 can not both travel *radially outwardly* as the cylinder plug rotates as is taught by the Examiner's proposed combination and be carried by the cylinder plug as the plug rotates as defined by Appellant's claim 46, prevents the Examiner's proposed combination from providing Appellant's "bar borne by said plug ... interposed between said shell and said cylinder plug to reciprocate generally along a radial plane ... ." This difference is not trivial and must be considered in determining obviousness *vel non* because it is this difference that enables Appellant's bar to be carried with the cylinder plug and to cooperate with another locking mechanism carried by the cylinder plug. The Examiner's combination can no provide this advantage. Accordingly, claim 46 is patentably distinguishable and allowable.

**Third**, the Examiner has impermissibly neglected to examine "the subject matter" of claims 14 and 43 "as a whole" as required under the first paragraph of 35 U.S.C. §103. Specifically, the secondary locking mechanism of both Gokcebay '777 and Thordmark '274 operate wholly, completely and independently of their respectively pin tumblers and side tumblers. In contradistinction, Appellant teaches an "elongate member" that provides "simultaneously engagement of said cylinder and said plug" in combination with "electrical operator" that is disposed to maintain "said simultaneously engagement" provided by the elongate member. Neither the solenoid 36 and pin 38 of the primary reference nor the coil 17 of the secondary reference may be said to maintain Appellant's simultaneously engagement provided by the elongate member between the cylinder and the plug. Consequent, there is no *prima facie* showing of obviousness. It is this cooperation between

the elements of Appellant's structure that has resulted in a compound mechanism that is both compact and reliable with the electrical operator reinforcing the locking provided by the apparatus. In view of these and other distinctions, as well as the noted advantages flowing from those distinctions, the Examiner's proposed combination improperly fails to consider the "subject matter as a whole" and is required by 35 U.S.C. §103, and the rejection must be withdrawn.

**Fourth**, and as was earlier noted, both the primary and secondary references rely upon bitted keys and the corresponding pin tumblers to provide their primary locking functions. As was also earlier noted, both of those primary locking functions are structurally independent of the "secondary locking 'high security' mechanical features" (see Gokcebay '777, col. 6, lines 55, 56). The Examiner's comments under 37 C.F.R. §1.104(c)(2) tend to become rambling and fail to clearly designate "the particular part relied on" in the three references that form the proposed combination. To the extent that the Examiner proposes to place the moving coil 17 and armature 18 of Thordmark '274 into the plug of Gokcebay '777, moving coil 71 and armature 18 will surely displace the "conventional pin tumbler mechanical bittings" of Gokcebay (see Gokcebay '777, col. 6, line 62) from the cylinder plug and concomitantly, impermissibly destroy the ability of the primary reference to rely upon those "conventional pin tumbler mechanical bittings" as the primary locking mechanical feature; this is an improper combination under 35 U.S.C. §103 and may not be relied upon to support an obviousness rejection.

**Fifth**, to the extent that the Examiner intends to have moveable coil 17 and blocking element 11 of Thordmark '274 in a radial orientation in the proposed combination, that configuration will simply replace solenoid 36 and blocking pin 38 of the primary reference because moveable coil 17

and blocking element 11 travel together. Moreover, blocking element 11 has no useful function in such a configuration. Furthermore, this configuration will still not meet the several features of claims 14 and 43 that are noted in the foregoing paragraphs, and the Examiner's reliance upon Naveda '127 will not remedy these deficiencies.

**Sixth**, there is simply neither basis nor motivation for making the combination proposed by the Examiner except as an impermissible hindsight reconstruction of the art in the light provided only by Appellant's claims. Thordmark '247 expressly denigrates the use of "radially directed elements" such as that taught by Gokcebay '777 (see Thordmark '274, col. 2, lines 50-60), and expressly states that his structure "is to eliminate the aforesaid drawbacks" (see Thordmark '274, col. 2, lines 64-65) that are attendant upon those "radially directed elements." Neither the express limitations of Appellant's claims nor this express denigration of the Examiner's proposed combination may not be ignored in a determination of obviousness *vel non* because this denigration by the secondary reference expressly negates the requisite motivation necessary to make the Examiner's proposed combination under 35 U.S.C. §103. Accordingly, the rejection is improper and can not stand.

#### **Claim 56**

Claim 56 was rejected under 35 U.S.C. §103(a) as rendered obvious by proposed combination of Gokcebay '777 modified according to the Thordmark U.S. 5,542,274 in view of Naveda U.S. 4,416,127. Appellant respectfully traverses this rejection for the following reasons.

The lock defined by claim 56 has "an elongate member interposed between said shell and said

plug to travel generally along a radial direction” in combination with “an electrical operator responding to said control signal by moving in a second direction not aligned with said radial direction ... obstructing said travel ... .” Wholly absent from the Examiner’s proposed combination is any teaching of how an electrical operator formed by moveable coil 17 and blocking element 11 of Thordmark ‘274 could be made to travel in any direction that is not aligned with said radial direction.” Moreover, the Examiner’s comments have neglected to explain how movement in different planes could be obtained by the proposed combination; in fact, all movement in the proposed combination exists only within the same plane. Accordingly, there is no *prima facie* showing of obviousness, and claim 56 is readily patentably distinguishable over the prior art.

**Claims 64, 65, 70, 75, 76 and 77**

Independent claims 64, 65, 70, 75, 76 and 77 were rejected under 35 U.S.C. §103(a) as rendered obvious by proposed combination of Gokcebay '777 modified according to the Thordmark U.S. 5,542,274 in view of Naveda U.S. 4,416,127. Appellant respectfully traverses this rejection for the following reasons.

**First**, the lock defined by claim 64 uses “a bar interposed between said shell and said cylinder plug to travel generally along a radial plane” in combination with “an electrical operator borne by said cylinder plug and rotatable with said plug, said electrical operator being electrically operable to respond to said control signal by moving independently of said travel by said bar, between one of a first orientation providing obstruction of said travel and a second and different orientation accommodating *said travel* ... .” As defined by claim 65, Appellant’s lock uses “a bar interposed



between said shell and said cylinder plug to travel generally along a radial plane” in combination with “an electrical operator borne by said cylinder plug and rotatable with said plug, said electrical operator being electrically operable to respond to said control signal by moving in a second direction not aligned with said radial direction ... obstructing *said travel* ... .” Claim 70 uses “a bar interposed between said shell and said cylinder plug to travel generally along a radial plane” in combination with “an electrical operator borne by said cylinder plug and rotatable with said plug, said electrical operator being electrically operable to respond to said control signal by moving along a geometric construct other than to said radial plane between one of a first orientation providing obstruction of said travel and a second and different orientation accommodating said travel ... .” Claim 75 uses “a bar interposed between said shell and said cylinder plug to travel generally along a radial plane” in combination with “an electrical operator borne by said cylinder plug and rotatable with said plug, said electrical operator being electrically operable to respond to said control signal by moving along a radial axis that is transverse to said radial plane between a first orientation providing obstruction of said travel and a second and different orientation accommodating said travel ... .” Claim 76 uses “an elongate bar exhibiting a greatest longitudinal dimension along a second axis that extends transversely to said first base and to said second base, said bar being interposed between said shell and said cylinder plug to travel generally along a radial axis that is transverse to said second axis ... “ in combination with “an electrical operator borne by said cylinder plug and rotatable with said plug, said electrical operator being electrically operable to respond to said control signal by moving along said radial axis between one of a first orientation providing obstruction of *said travel* and a second and different orientation accommodating *said travel* ... .” Claim 77 however, uses “an elongate bar

exhibiting a greatest longitudinal dimension along a second axis that extends transversely to said first base and to said second base, said bar being interposed between said shell and said cylinder plug to travel generally along a radial axis that is radial to said cylinder plug and transverse to said second axis, between a first position engaging both said shell and said plug while obstructing rotation of said cylinder plug within said recess ...” together with “an electrical operator borne by said cylinder plug and rotatable with said plug ... to respond to a control signal by moving between one of a first orientation providing obstruction of *said travel* ... .” Not only does the Examiner’s proposed combination fail to meet these varied express geometric definitions, but Appellant’s interaction between an electrical operator borne by and rotatable with the cylinder plug and the travel of the bar interposed between the shell and the cylinder plug is not found in the prior art, either taken as individual references or in the combination proposed by the Examiner simply because all of the references relied upon by the Examiner uniformly restrict movement to within a single plane. The substitution of moveable coil 17, blocking element 11 and latching element 10 of Thordmark ‘274 for solenoid 36 and blocking pin 38 of Gokcebay ‘777 necessary to construct the Examiner’s proposed combination will prevent the proposed combination from achieving Appellant’s travel and orientation. Consequently, the Examiner has failed to make a *prima facie* showing of obviousness. It is this difference in geometric movement, together with the defined inter-cooperation that advantageously endow Appellant’s embodiments with the enhanced security of the locking function that is available with neither the primary or either of the two secondary references. Independent claims 64, 65, 70, 75 and 76 are therefore patentably distinguishable, and allowable under 35 U.S.C. §103(a).

**Second**, the sole motivation provided in the art for the combination proposed by the Examiner is an impermissible reconstruction of the art in the light provided by Appellant alone. This, by itself, is convincing indicia of the patentability of claims 64, 65, 70, 75 and 76 under 35 U.S.C. §103.

**Third**, ostensibly the prior art relied upon by the Examiner endeavors to provide a lock that may be easily retrofitted. Gokcebay '777 however, requires that a bore 50 be drilled within the shell of the existing lock while Thordmark '274 requires that a separate V-shaped groove 3c that is spaced-apart and distinct from the slot for sidebar 7, be machined within the cylinder, and that the entire recess shown in Figure 1 be machined into the shell. Contrary to the Examiner's assertions, neither Naveda '127 nor Thordmark '274 nor Gockebay '777 advocates both insertion of an electrical operator into the cylinder plug and some interaction between that plug borne operator and a bar, elongated member or sidebar that is able to make simultaneous engagement of both the shell and cylinder plug, because:

- Gockebay '777 teaches only insertion of a solenoid within the cylinder,
- Gockebay '777 is wholly devoid of any bar (other than the armature 18 that is itself a part of solenoid 17),
- Gockebay '777 is wholly devoid of any bar that provides any type of engagement between the shell and cylinder,
- Thordmark '274 teaches nothing about insertion of any operator within the cylinder,
- both Gockebay '777 and Thordmark '274 require not only complete replacement of the cylinder, but major alteration of the shell in order to accommodate a retrofit,
- both Gockebay '777 and Thordmark '274 are utterly incapable of providing any interaction

with their primary locking mechanical features, and

- Naveda '127 is singularly devoid of any teaching of a cylinder plug and discloses no primary mechanical locking mechanism as is required by both Gockebay '777 and Thordmark '274,
- Naveda '127 fails to describe how traveling coil 17, armature 18 and latching element 10 of Fig. 7 of Thordmark '274 incorporated into the plug of Gockebay '777.

In contradistinction, Appellant's claims define a structure with an electrical operator borne by the cylinder plug, a member moving in response to the operator, and interaction between the operator and a bar, elongate member or sidebar interposed between the shell and the cylinder plug. Although these differences may appear to be but a small advance in the art, the advantages flowing from these differences are substantial. For example, only Appellant's claims define a structure with an electronic operator borne by the cylinder plug that interacts with a sidebar, elongate member or bar, and that consequently, is able to advantageously both retrofit an installed lock by the expedient of replacing only the cylinder plug *without any* alteration of the shell and to *interact or cooperate with* an existing sidebar of a primary mechanical locking mechanism that is positioned between the shell and plug. The fact that both Gockebay '777 and Thordmark '274 are concerned with retrofitting of existing locks, a fact noted by the Examiner, and that both references require modification of the shell of the lock in order to complete that retrofitting, while Appellant alone provides a cylinder plug that may work with an existing sidebar and may be retrofit without any modification of the shell is a difference between the prior art and the structure defined by the pending claims that prevents the subject matter as a whole from being obviousness under 35 U.S.C. §103. This deficiency in the Examiner's proposed combination is not remedied by Naveda '127. Moreover, this deficiency is highlighted by

the fact that Thordmark '274 clearly avoids either teaching or suggestion of any interaction or cooperation between sidebar 7 and coil 17.

This interaction with the existing sidebar beneficially enhances the security provided by Appellant's lock. Neither Gockebay '777, Thordmark '274 nor Naveda '127, nor the Examiner's proposed combination of Gockebay '777, Thordmark '274 and Naveda '127 are able to provide these advantages. Moreover, the Examiner's proposed combination is incomplete and fails to make a *prima facie* showing of obviousness; how, for example, is the traveling coil 17, armature 18 and latching element 10 of Fig. 7 of Thordmark '274 incorporated into the plug of Gockebay '777? No details of such a combination are provided by the Examiner's proposed combination. Accordingly, in view of these differences between the pending claims and the prior art, "the subject matter as a whole" can not be found to be rendered obvious under 35 U.S.C. §103. In short, the Examiner has unfairly sought to limit the scope of coverage to which Appellant is entitled by reconstructing the art in an effort to meet the terms of Appellant's claims when none of that art suggests such a simple modification of the art as Appellant's electrical operator being both borne by and rotating with the cylinder plug *and* operating to block the travel of a sidebar. Accordingly, reversal of this rejection is required.

Claims 85 - 89

Independent claims 85 and 89, which Appellant copied from claims 1 and 14, respectively, of the Field U.S. Patent No. 5,839,307, were rejected under 35 U.S.C. §103(a) as rendered obvious by proposed combination of Gokcebay '777 modified according to the Thordmark U.S. 5,542,274 in

view of Naveda U.S. 4,416,127. Appellant respectfully traverses this rejection for the following reasons.

**First**, Appellant notes that the Examiner improperly asserted that independent claim 90, copied from claim 19 of Field '307 patent, was withdrawn from consideration, even though claim 90 defines the salient features of Appellant's elected species. Moreover, the field of search is co-extensive with the elected species. Consideration of claim 90 is therefore required.

**Second**, the combination proposed by the Examiner would impermissibly destroy the ability of the primary reference to operate in its intended mode of operation. Gokcebay '777 expressly teaches a radially oriented solenoid 36 and blocking pin 38, together with the pin tumbler relied upon by the Examiner, mentioned in col. 6, lines 61 and 62. The alternative embodiment illustrated by Figure 7 of Thordmark '274 that is relied upon by the Examiner includes side tumblers 5 and side bar 7 mounted in the cylinder plug 3, while the coil 17 and the blocking element 11 are mounted within the shell rather than within the cylinder plug. Gokcebay '777 however, expressly teaches in col. 3, beginning with line 2, that all of electronics and hardware are "contained in the cylinder plug", and that nothing is "required outside of the lock cylinder" aside "from a small recess or bore which is provided in the cylinder shell." The combination proposed by the Examiner relies upon the hardware and electronics of Thordmark '274 that are necessarily housed within the shell, rather than within the cylinder plug as required by the primary reference. Moreover, that combination eliminates the small recess or bore of the primary reference, which the primary reference relies upon to assure a positive locking by allowing "for secondary locking high security mechanical features, generally located in side of the cylinder plug." See Gokcebay '777 at col. 6, beginning with 55. Consequently, the

Examiner's proposed combination fails to provide Appellant's "electronically powered drive mechanism located within the barrel *and cooperating with* the electromechanical locking member to selectively move the locking member from the barrel blocking position ... ." In short, both the simplicity and the secondary locking of the primary reference are removed by the Examiner's proposed combination.

**Third**, It is unclear whether the Examiner's proposed combination relies upon the pin tumblers (not shown, col. 6, lines 61-62) of Gokcebay '777 or the "latching element 10" of Thordmark '274, to meet Appellant's pending claims. An analysis of the Examiner's proposed combination incorporating the pin tumblers (not shown, col. 6, lines 61-62) of Gokcebay '777 is discussed in the preceeding paragraph. To the extent that the Examiner incorporates the "latching element 10" of Thordmark '274 to meet the language of Appellant's pending claims, there are two structural impediments which make the Examiner's proposed combination untenable. First, claims 85 and 89 respectively define a structure with "a side bar ... [and] an electronically powered drive mechanism located within the barrel *and cooperating with* the electromechanical locking member to selectively move the locking member from the barrel blocking position to the non-barrel blocking position in which the side bar moves out of the cavity ..." and "an electronically powered drive mechanism located within the barrel member for moving the electromechanical locking member to a position in which the groove of the locking member is in said alignment." In contradistinction, in the Examiner's proposed combination, coil 17, blocking element 11 and latching element 10 of Thordmark '274 must reside in the cylinder shell in order to accommodate the existence of the top tumblers and side tumblers 5 for top code 4a and side code 4b that, as shown by Figs. 1 and 2, extend

over substantially the entire axial length of plug 3. Second, coil 17, blocking element 11 and latching element 10 of Thordmark '274 are mounted within an axial recess. Wholly absent from the art relied upon by the Examiner to make this proposed combination is any teaching or suggestion of how to alter the configuration of coil 17, blocking element 11 and latching element 10 of Thordmark '274 (that form the "secondary locking high security mechanical features" required by Gokcebay '777) to fit within the mass of plug 3 without displacing the combination of the keyway and the primary locking mechanism (formed by the top tumblers and side tumblers 5 for top code 4a and side code 4b). Appellant submits that any miniaturization of the "secondary locking high security mechanical features" that may be required by Gokcebay '777) in order to fit within the mass of plug 3 would necessarily diminish the ability of latching element 10 to resist "shear forces at the interface between plug and lock cylinder." See Thordmark '274, at column 2, lines 54-57. This miniaturization of the configuration of coil 17, blocking element 11 and latching element 10 of Thordmark '274 in order to mount these components within the plug of Gokcebay '777 essentially reduces latching element 10 to nothing more than "a latching pin." This is hardly an enhancement of security as is asserted by the Examiner. It should be noted however, that Thordmark '274 expressly warns that such structures as "latching pins or like devices will fracture even when only a relatively moderate force is used on the lock, therewith enabling the lock to be opened." Thordmark '274, col. 2, lines 57-61. In short, the Examiner's proposed combination is a deliberate and improper weakening of the "high security" demanded by Gokcebay '777 of such secondary locking mechanical features. See Gokcebay '777, at column 6, lines 55-56.

The suggestions of Naveda '127 about the "size or geometric shape" of a key (col. 4, lin60),



and the presence of an “electromagnet” that is “located in the receiver or alternatively in the body of the key” (col. 9, lines 22-25), are immaterial to these issues raised by the Examiner’s miniaturization of the configuration of coil 17, blocking element 11 and latching element 10 of Thordmark ‘274 in order to mount these components within the plug of Gokcebay ‘777 because Naveda ‘127 teaches nothing about Appellant’s barrel member. Moreover, the “electromagnetic 36” of Naveda ‘127 is structurally and functionally different from Appellant’s “electronically powered drive mechanism.” Incorporation of “electromagnetic 36”, which is not small in size, into the plug of Gokcebay ‘777 will remedy none of the deficiencies in the Examiner’s proposed combination noted earlier in this response.

In view of the fact that both the primary and secondary references teach away from such diminution of security, and nothing in Naveda ‘127 neither teaches nor suggests how to accommodate the presence of both the combination of the keyway 26 (of Gockebay ‘777) and the primary locking mechanism (formed for example, by the top tumblers and side tumblers 5 for top code 4a and side code 4b) and the configuration of coil 17, blocking element 11 and latching element 10 of Thordmark ‘274. In contradistinction, Appellant’s structure alone allows for a sidebar that may be axially extended over the entire length of the junction between the shell and the cylinder plug, a structure that, unlike the Examiner’s proposed miniaturization, is better able to resist “shear forces at the interface between plug and lock cylinder.” See Thordmark ‘274, at column 2, lines 54-57. Moreover, the Examiner’s proposed combination makes no provision for either “side bar cooperating between the shell and the barrel ... wherein at least one electromechanical locking member is disposed within the barrel and is positionable in a barrel blocking position” as defined by claim 85 or the “locking

member including a groove” that is “disposed within the recess of the barrel member” defined by Appellant’s claim 89.

In short, formation of the axial recess in cylinder plug 24 of Gokcebay ‘777 necessary to accommodate the configuration of the secondary locking mechanism of coil 17, blocking element 11 and latching element 10 of Thordmark ‘274 would essentially cleave plug 24 in two, with the T-shaped element 20 on one side of the cleave and latching element 10 protruding from the other side of that cleave, while any miniaturization of the secondary locking mechanism would be contrary to the express teachings of Thordmark ‘274 and would diminish the security which both Gokcebay ‘777 and Thordmark ‘274 teach; under 35 U.S.C. §103 the Examiner can not alone modify the structures taught by the primary and secondary references in a manner that would defeat the expressly articulated goal of those references. These deficiencies in the Examiner’s proposed combination, together with the enhancement of the security provided thereby, are evidence of the non-obviousness of the lock defined by the structure of claims 85 through 89. Reversal of this rejection is therefore required.

#### **Claim 91**

Claim 91 was rejected under 35 U.S.C. §103(a) as rendered obvious by the proposed combination of Gokcebay ‘777 modified according to the Thordmark U.S. 5,542,274 in view of Naveda U.S. 4,416,127. Appellant respectfully traverses this rejection for the following reasons.

**First**, the lock defined by claim 91 uses “a bar interposed between said shell and said cylinder plug to reciprocate generally along a radial plane” in combination with “an electrical operator borne by said cylinder plug and rotatable with said plug, said electrical operator being electrically operable

to respond to said control signal by moving independently of said bar between a first orientation providing obstruction of *said reciprocation* by said bar and a second and different orientation removing said obstruction.” The sole motivation provided in the art for the combination proposed by the Examiner is an impermissible reconstruction of the art in the light provided by Appellant alone. This, by itself, is convincing indicia of the patentability of claims 64, 65, 70, 75 and 76 under 35 U.S.C. §103.

**Second**, ostensibly, all of the art relied upon by the Examiner endeavors to provide a lock that may be easily retrofitted. Gokcebay ‘777 however, requires that a bore 50 be drilled within the shell of the existing lock while Thordmark ‘274 requires that a separate V-shaped groove 3c that is spaced-apart and distinct from the slot for sidebar 7, be machined within the cylinder, and that the entire recess shown in Figure 1 be machined into the shell. Contrary to the Examiner’s assertions, neither Naveda ‘127 nor Thordmark ‘274 nor Gockebay ‘777 advocates both insertion of an electrical operator into the cylinder plug and some interaction between that plug borne operator and a bar, elongated member or sidebar that is able to make simultaneous engagement of both the shell and cylinder plug, because:

- Gockebay ‘777 teaches only insertion of a solenoid within the cylinder,
- Gockebay ‘777 is wholly devoid of any bar (other than the armature 18 that is itself a part of solenoid 17),
- Gockebay ‘777 is wholly devoid of any bar that provides any type of engagement between the shell and cylinder,
- Thordmark ‘274 teaches nothing about insertion of any operator within the cylinder,

- both Gockebay '777 and Thordmark '274 require not only complete replacement of the cylinder, but major alteration of the shell in order to accommodate a retrofit,
- both Gockebay '777 and Thordmark '274 are utterly incapable of providing any interaction with their primary locking mechanical features, and
- Naveda '127 is singularly devoid of any teaching of a cylinder plug and discloses no primary mechanical locking mechanism as is required by both Gockebay '777 and Thordmark '274,
- Naveda '127 fails to describe how traveling coil 17, armature 18 and latching element 10 of Fig. 7 of Thordmark '274 incorporated into the plug of Gockebay '777.

In contradistinction, Appellant's claims define a structure with an electrical operator borne by the cylinder plug, a member moving in response to the operator, and interaction between the operator and a bar, elongate member or sidebar interposed between the shell and the cylinder plug. Although these differences may appear to be but a small advance in the art, the advantages flowing from these differences are substantial. For example, only Appellant's claims define a structure with an electronic operator borne by the cylinder plug that interacts with a sidebar, elongate member or bar, and that consequently, is able to advantageously both retrofit an installed lock by the expedient of replacing only the cylinder plug *without any* alteration of the shell and to *interact or cooperate with* an existing sidebar of a primary mechanical locking mechanism that is positioned between the shell and plug. The fact that both Gockebay '777 and Thordmark '274 are concerned with retrofitting of existing locks, a fact noted by the Examiner, and that both references require modification of the shell of the lock in order to complete that retrofitting, while Appellant alone provides a cylinder plug that may work with an existing sidebar and may be retrofit without any modification of the shell is a difference

between the prior art and the structure defined by the pending claims that prevents the subject matter as a whole from being obviousness under 35 U.S.C. §103. This deficiency in the Examiner's proposed combination is not remedied by Naveda '127. Moreover, this deficiency is highlighted by the fact that Thordmark '274 clearly avoids either teaching or suggestion of any interaction or cooperation between sidebar 7 and coil 17.

This interaction with an existing sidebar beneficially enhances the security provided by Appellant's lock. Neither Gockebay '777, Thordmark '274 nor Naveda '127, nor the Examiner's proposed combination of Gockebay '777, Thordmark '274 and Naveda '127 are able to provide these advantages. Moreover, the Examiner's proposed combination is incomplete and fails to make a *prima facie* showing of obviousness; how, for example, is the traveling coil 17, armature 18 and latching element 10 of Fig. 7 of Thordmark '274 incorporated into the plug of Gockebay '777? No details of such a combination are provided by the Examiner's proposed combination. Accordingly, in view of these differences between the pending claims and the prior art, "the subject matter as a whole" can not be found to be rendered obvious under 35 U.S.C. §103. In short, the Examiner has unfairly sought to limit the scope of coverage to which Appellant is entitled by reconstructing the art in an effort to meet the terms of Appellant's claims when none of that art suggests such a simple modification of the art as Appellant's electrical operator being both borne by and rotating with the cylinder plug *and* operating to block the travel of a sidebar. Accordingly, reversal of this rejection is required.

Claim 91 was rejected under 35 U.S.C. §103(a) as rendered obvious by the same proposed

combination of Gokcebay '777 and Thordmark '274 . Appellant respectfully traverses this rejection for all the reasons set forth in the foregoing paragraphs.

Additionally, Appellant notes that the Examiner's proposed combination is devoid of such as further patentably distinguishing features as Appellant's "locking mechanism" that is "interposed between said cylinder plug and said bar." The foolishness with which the Examiner has conducted the examination may be best exhibited by a careful examination of both the references that the Examiner has repeatedly misrepresented in the examination. Neither those references may be said by the Examiner to accomplish in combination, what neither accomplishes alone. Even if by some rogue interpretation of §103 unsupported by either by the Commissioner or 35 U.S.C. §103 the Examiner is able to provide the Appellant's electrical operator bore by the cylinder plug, the Examiner is not able to demonstrate a locking mechanism that is "interposed between said cylinder plug and said plug." Appellant questions which noun in the phrase "locking mechanism" is not understood. This clear definition of cooperation between the several elements of Appellant's claim 91 provides both primary and secondary security, in the manner neither in vision nor suggested by the Examiner's proposed combination. Accordingly, claim 95 is separately patentably distinguishable and allowable. Reversal of the rejection is required.

Appellant notes that the Examiner has now asserted that claims copies from the Field '307 patent are patentably distinguishable from the claims issued in the Field '307 patent; the Examiner has provided no explanation for the assertion, except to assert that the copy claims are not "identical" to those appearing in Field '307. The Examiner is reminded that *ad hoc* determinations of this nature

are not justified and illegal. The Examiner has no authority to deviate from the *Manual*. As explained therein, “in order for an application claim to be for ‘substantially the same subject matter’ as a patent claim, it must contain all the material limitations of the patent claim.” There is no support for the Examiner’s invention, that the proposed account interference must be identical to one of the claims in the issued patent. If the Examiner persists in these rogue inventions, the Examiner is then requested to comply with §1003(6) which requires “actions which hold on patentable claims copied from the patent for interference whether grounds relied upon are equally applicable to the patentee,” in accordance with §2307.02 of the MPEP, the matter must be submitted the Group director, together with references to the section of the *Manual* for approval. In short, the Examiner lacks authority to reject independent claims 85, 89 or 90. Moreover, the Examiner is without authority to assert that process claim 90 has been withdrawn from consideration. Process claim 90 has never been the subject matter of election of species, and the Examiner has failed to provide any basis or authorization for its withdrawn. Its examination is required therefore.

#### **Claims 108-120**

Appellant notes that claim 120 is a copy of claim 14 of the Field ‘307 patent. The several components have been previously identified in the Appellant’s earlier filed responses. Appellant further notes that dependent claim 119 is directed to the language on lines 7-18 of column 9, it is copied from claim 1 of Field ‘307 patent. Consequently, claim 119 and 120 are identical to claims 1 and 14 of Field ‘307 patent. This language was previously presented within the one year period of time, and the language from claim 1 of Field ‘307 was removed because it is not believed to be

technically accurate.

Dependent claims 106-116 are newly presented to define further patentably distinguishable features of Appellant's invention. The bar, or sidebar, defined in these claims engages both shell and the cylinder plug during the rotation, a feature absent from the Examiner's primary reference. The Examiner has neglected to explain how the proposed combination might be modified to accomplish this engagement. It is this engagement that enables embodiments of Appellant's invention to provide both a primary and secondary locking. Accordingly, these claims are deemed patentably distinguishable and allowable over the prior art.

## IX. CONCLUSION

35 U.S.C. §103 requires consideration of whether the differences between the subject matter defined by each pending claim and the prior art are such that the "subject matter as a whole" would have been obvious? Under U.S. practice, "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. *In re Fritch*, 972 F.2d 1260, 1266, n.14, 23 USPQ2d 1780, 1783-84, n.14 (Fed Cir. 1992), citing *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). It is further established that the Examiner must make specific findings on a suggestion to combine prior art references. *In re Dembiczak*, 175 F.3d 994, 1000-01, 50 USPQ2d 1614, 1617-19 (Fed. Cir. 1999).

As demonstrated the by foregoing paragraphs, the Examiner has focused not on the subject matter of Appellant's claims as a whole, but has focused upon individual limitations. Ostensibly, the



prior art relied upon by the Examiner endeavors to provide a lock that may be easily retrofitted. Gokcebay '777 however, requires that a bore 50 be drilled within the shell of the existing lock while Thordmark '274 requires that a separate V-shaped groove 3c that is spaced-apart and distinct from the slot for sidebar 7, be machined within the cylinder, and that the entire recess shown in Figure 1 be machined into the shell. Contrary to the Examiner's assertions, neither Naveda '127 nor Thordmark '274 nor Gockebay '777 advocates both insertion of an electrical operator into the cylinder plug and some interaction between that plug borne operator and a bar, elongated member or sidebar that is able to make simultaneous engagement of both the shell and cylinder plug, because:

- Gockebay '777 teaches only insertion of a solenoid within the cylinder,
- Gockebay '777 is wholly devoid of any bar (other than the armature 18 that is itself a part of solenoid 17),
- Gockebay '777 is wholly devoid of any bar that provides any type of engagement between the shell and cylinder,
- Thordmark '274 teaches nothing about insertion of any operator within the cylinder,
- both Gockebay '777 and Thordmark '274 require not only complete replacement of the cylinder, but major alteration of the shell in order to accommodate a retrofit,
- both Gockebay '777 and Thordmark '274 are utterly incapable of providing any interaction with their primary locking mechanical features, and
- Naveda '127 is singularly devoid of any teaching of a cylinder plug and discloses no primary mechanical locking mechanism as is required by both Gockebay '777 and Thordmark '274,
- Naveda '127 fails to describe how traveling coil 17, armature 18 and latching element 10

of Fig. 7 of Thordmark '274 incorporated into the plug of Gockebay '777.

In contradistinction, Appellant's claims define a structure with an electrical operator borne by the cylinder plug, a member moving in response to the operator, and interaction between the operator and a bar, elongate member or sidebar interposed between the shell and the cylinder plug. Although these differences may appear to be but a small advance in the art, the advantages flowing from these differences are substantial. For example, only Appellant's claims define a structure with an electronic operator borne by the cylinder plug that interacts with a sidebar, elongate member or bar, and that consequently, is able to advantageously both retrofit an installed lock by the expedient of replacing only the cylinder plug *without any* alteration of the shell and to *interact or cooperate with* an existing sidebar of a primary mechanical locking mechanism that is positioned between the shell and plug. The fact that both Gockebay '777 and Thordmark '274 are concerned with retrofitting of existing locks, a fact noted by the Examiner, and that both references require modification of the shell of the lock in order to complete that retrofitting, while Appellant alone provides a cylinder plug that may work with an existing sidebar and may be retrofit without any modification of the shell is a difference between the prior art and the structure defined by the pending claims that prevents the subject matter as a whole from being obviousness under 35 U.S.C. §103. This deficiency in the Examiner's proposed combination is not remedied by Naveda '127. Moreover, this deficiency is highlighted by the fact that Thordmark '274 clearly avoids either teaching or suggestion of any interaction or cooperation between sidebar 7 and coil 17.

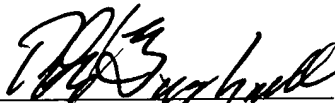
This interaction with the existing sidebar beneficially enhances the security provided by Appellant's lock. Neither Gockebay '777, Thordmark '274 nor Naveda '127, nor the Examiner's

proposed combination of Gockebay '777, Thordmark '274 and Naveda '127 are able to provide these advantages. Moreover, the Examiner's proposed combination is incomplete and fails to make a *prima facie* showing of obviousness; how, for example, is the traveling coil 17, armature 18 and latching element 10 of Fig. 7 of Thordmark '274 incorporated into the plug of Gockebay '777? No details of such a combination are provided by the Examiner's proposed combination. Accordingly, in view of these differences between the pending claims and the prior art, "the subject matter as a whole" can not be found to be rendered obvious under 35 U.S.C. §103. In short, the Examiner has unfairly sought to limit the scope of coverage to which Appellant is entitled by reconstructing the art in an effort to meet the terms of Appellant's claims when none of that art suggests such a simple modification of the art as Appellant's electrical operator being both borne by and rotating with the cylinder plug *and* operating to block the travel of a sidebar. Evidence of that error in the formation of the Examiner's proposed combination lies in the fact that the proposed combination is depends upon a primary reference that discloses numerous embodiments of an invention, but none of those several embodiments derive any advantage from the modifications required to construct the Examiner's proposed combination; those modifications simply produce a more cumbersome structure with more parts that accomplishes nothing that the primary reference does not achieve without those modifications. This is evidence of a lack of motivation in the art to make the modifications necessary to construct the Examiner's proposed combination, as well as evidence that the Examiner is simply using Appellant's claims as a blueprint in an impermissible effort to make a hindsight reconstruction of the art.

An improvement made in such a very crowded and ancient art is further evidence of non-

obviousness. Consequently, reversal of this rejection and allowance of claims 46 through 52, 54, 56, 64, 70, 76, 85, 88 through 91, 105, 108, 109, 111, 113 through 116, 119, 120 and 121 is urged.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read 'R. E. Bushnell', written over a horizontal line.

Robert E. Bushnell,  
Attorney for the Appellant  
Registration No.: 27,774

1522 "K" Street N.W., Suite 300  
Washington, D.C. 20005  
(202) 408-9040

Folio: P53821C  
Date: 6/3/4  
I.D.: REB/kf

## X. APPENDIX I

### Claims Under Appeal

**Claims 1-24, 34-38, 46-52, 54, 56, 64-70, 75-77, 85, 88-106, 108, 109, 111-116, 119-121**

1           1. (previously presented) A plug, comprising:  
2                 a first base bearing a keyway providing a first electrical conductor and an orifice  
3 spaced-apart from and separated by a mass of said plug from said keyway;  
4                 a second base separated by an axial length of said plug from said first base, said second  
5 base disposed to support a cam, said mass being perforated by a plurality of radially oriented apertures  
6 forming an array;  
7                 an exterior surface extending between and engaging said first base and said second  
8 base;  
9                 a sidebar positioned between said first base and said second base to reciprocate  
10 between a first location with said sidebar simultaneously engaging said plug and a cylinder  
11 surrounding said plug, and a second location releasing said plug for relative to movement between  
12 the cylinder and said plug;  
13                 a locking mechanism disposed within said apertures to move relative to said plug in  
14 response to a key inserted into said keyway to accommodate reciprocation of said sidebar relative to  
15 said plug and rotation of said plug relative to the cylinder when the key while inserted into said  
16 keyway engages in a selected relation with said locking mechanism, and obstructing said  
17 reciprocation absent said selected relation;  
18                 a second electrical conductor terminating with an electrical contact exposed to an  
19 exterior of said first base through said orifice;  
20                 an electronic logic circuit borne by said plug while coupled to receive electrical data  
21 signals via said first and second electrical conductors, and generating control signals in dependence  
22 upon said electrical power and data signals; and  
23                 an electrical operator disposed within one of said apertures, said operator having a  
24 distal member travelling in dependence upon said control signals between a first position relative to

25 said exterior surface obstructing said relative movement by engaging a detent protruding from the  
26 cylinder, and a second and different position relative to said exterior surface accommodating said  
27 relative movement.

1 2. (previously presented) The plug of claim 1, comprising said locking mechanism, logic  
2 circuit and electrical operator simultaneously experiencing said rotation relative to the cylinder  
3 whenever said plug rotates relative to the cylinder.

1 3. (previously presented) The plug of claim 1, comprising said locking mechanism, logic  
2 circuit and electrical operator being wholly within the cylinder and travelling with said plug whenever  
3 said plug moves relative to the cylinder.

1 4. (previously presented) The plug of claim 1, with said electrical operator maintaining said  
2 distal member within said plug with said distal member extended not beyond said exterior surface  
3 while said distal member is in said first position, and maintaining said distal member in concurrent  
4 engagement with said plug and with the detent while said distal member is in said first position.

1 5. (previously presented) The plug of claim 1, with said electrical operator maintaining said  
2 distal member within said plug with said distal member extending not beyond said exterior surface  
3 while said distal member is in said first position, and moving said distal member radially between  
4 relative to said exterior surface in dependence upon said control signals.

1 6. (previously presented) A lock, comprising:  
2 a cylinder containing a hollow recess defining a longitudinal axis and a stationary  
3 detent extending from said cylinder;  
4 a plug bearing a plurality of open radially oriented apertures forming an array, said  
5 plug being rotatable around said longitudinal axis while resident within said hollow recess, said plug  
6 comprising:

7 a first base bearing a keyway providing a first electrical conductor and an  
8 orifice spaced-apart from and separated by a mass of said plug from said keyway;

9 a second base separated by an axial length of said plug from said first base,  
10 said second base disposed to support a cam;

11 an exterior surface extending between and engaging said first base and said  
12 second base;

13 a sidebar positioned between said first base and said second base to create an  
14 obstruction to relative movement between said cylinder and said plug;

15 a locking device disposed within said apertures to release and obstruction when the  
16 key while inserted into said keyway engages in a selected relation with said locking means, and to  
17 maintain said obstruction absent said selected relation;

18 a second electrical conductor terminating with an electrical contact exposed to an  
19 exterior of said first base through said orifice;

20 an electronic logic circuit borne by said plug, coupled to receive electrical data signals  
21 via said first and second electrical conductors, and generating control signals in dependence upon said  
22 electrical power and data signals; and

23 an electrical operator borne by said plug, disposed within one of said apertures, said  
24 operator having a distal member radially traveling along an axis transverse to said longitudinal axis,  
25 in dependence upon said control signals between a first position relative to said exterior surface by  
26 engaging said detent and thereby obstructing said movement in concert with said locking device and  
27 a second and different position relative to said exterior surface accommodating said movement.

1 7. (previously presented) The plug of claim 6, comprising said locking device, logic circuit  
2 and electrical operator simultaneously experiencing said rotation relative to the cylinder whenever  
3 said plug rotates relative to the cylinder.

1 8. (previously presented) The plug of claim 6, comprising said locking device, logic circuit  
2 and electrical operator being wholly within the cylinder and travelling with said plug whenever said

3 plug moves relative to the cylinder.

1 9. (previously presented) The plug of claim 6, with said electrical operator maintaining said  
2 distal member within said plug with said distal member extended not beyond said exterior surface  
3 while said distal member is in said second position, and maintaining said distal member in  
4 engagement with said detent while said distal member is in said first position.

1 10. (previously presented) The plug of claim 6, with said electrical operator maintaining said  
2 distal member within said plug with said distal member extending not beyond said exterior surface  
3 while said distal member is in said first position.

1 11. (previously presented) A lock, comprising:  
2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface, said shell bearing a detent extending into said shell;  
4 a plug rotatable around said longitudinal axis while resident within said hollow recess,  
5 and a bar interposed between said shell and said plug generally along a radial plane engaging both  
6 said shell and said plug while obstructing rotation of said plug within said recess, said plug  
7 comprising:  
8 a first base providing a first electrical conductor;  
9 a second base separated by an axial length of said plug from said first base;  
10 an exterior surface extending between and engaging said first base and said  
11 second base;  
12 a locking device responsive to a key inserted into said keyway accommodating  
13 relative movement between said shell and said plug when the key while inserted into said  
14 keyway engages in a selected relation with said locking device and obstructing said relative  
15 movement absent said selected relation;  
16 a second electrical conductor terminating with an electrical contact exposed  
17 to an exterior of said first base through said orifice;



18 an electronic logic circuit coupled to receive electrical data signals via said first  
19 and second electrical conductors, and generating control signals in dependence upon said data  
20 signals; and

21 an electrical operator having a distal member moving relative to said detent,  
22 in dependence upon said control signals between a first orientation relative to said exterior  
23 surface enabling said relative movement and a second and different orientation relative to said  
24 exterior surface obstructing said relative movement when said distal member at least partially  
25 surrounds said distal member.

1 12. (previously presented) The plug of claim 1, further comprised of said:

2 electrical operator comprising an electrical coil coaxially aligned with said distal  
3 member, to move said distal member between said second position and said first position in response  
4 to said control signals; and

5 said distal member bearing a circumferential surface blocking said relative movement while  
6 said distal member is in said second position, and a variation in said circumferential surface  
7 accommodating said relative movement while said distal member is in said first position.

1 13. (previously presented) The plug of claim 6, further comprised of said:

2 electrical operator comprising an electrical coil coaxially aligned with said distal  
3 member, to move said distal member between said second position and said first position in response  
4 to said control signals; and

5 distal member bearing a circumferential surface engaging said detent while said distal  
6 member is in said second position, and a variation in said circumferential surface accommodating said  
7 relative movement while said distal member is in said first position.

1 14. (previously presented) A lock, comprising:

2 a cylinder containing a hollow interior recess defining a longitudinal axis, and bearing  
3 a slot within said recess; and

4 a plug rotatable from a rest orientation around said longitudinal axis while resident  
5 within said hollow recess relative to said cylinder; and

6 a stationary detent positioned between said first end and second end while extending  
7 into said slot, and providing simultaneous engagement of said cylinder and said plug while said  
8 cylinder remains in said rest orientation;

9 said plug comprising:

10 a first base bearing an opening accommodating insertion of a key and  
11 providing a first electrical conductor;

12 a second base separated by an axial length of said plug from said first base,  
13 said second base disposed to support a cam, said mass being perforated by a an aperture;

14 an exterior surface extending between said first base and said second base;

15 retaining means oriented to retain a shank of a key inserted into said opening  
16 while said plug remains in an orientation other than said rest orientation relative to said  
17 cylinder, and to accommodate reversal of the key from said opening while said plug is in said  
18 rest orientation;

19 a second electrical conductor terminating with an electrical contact exposed  
20 to an exterior of said first base through said orifice;

21 an electronic logic circuit comprising a memory storing a code, said circuit  
22 being borne by said plug and coupled to receive electrical data signals via said first and  
23 second electrical conductors, said circuit generating control signals in dependence upon  
24 correspondence between said code and information borne by said data signals; and

25 an electrical operator borne by said plug, said operator having a distal member  
26 travelling in dependence upon said control signals between a first position relative to said  
27 exterior surface maintaining engagement of said detent and a second and different position  
28 relative to said exterior surface accommodating movement between said plug and said  
29 cylinder.

1 15. (previously presented) The lock of claim 14, further comprising:

2           said detent being borne by said cylinder; and  
3           said distal member being oriented within said plug to move relative to said plug to  
4 accommodate rotation of said plug from said rest orientation relative to the cylinder when a key while  
5 inserted into said opening generates said data signals representing information having a selected said  
6 correspondence with said code, and obstructing said rotation absent said selected correspondence.

1           16. (previously presented) The lock of claim 14, further comprising:

2           said detent comprising an arm arcuately engaging said cylinder and a tooth extending  
3 from said arm and through said slot; and

4           said distal member being oriented within said plug to move relative to said plug to  
5 accommodate passage of said tooth relative to said distal member during rotation of said plug from  
6 said rest orientation relative to the cylinder when a key while inserted into said opening generates said  
7 data signals representing information having a selected said correspondence with said code, and  
8 obstructing said rotation of said plug from said rest orientation by engaging said tooth absent said  
9 selected correspondence.

1           17. (previously presented) The lock of claim 14, further comprising:

2           said detent comprising an arm arcuately engaging said cylinder and a tooth extending  
3 from said arm and through said slot; and

4           said distal member being oriented within said plug to move relative to said plug to  
5 accommodate passage of said tooth relative to said distal member during rotation of said plug from  
6 said rest orientation relative to the cylinder when a key while inserted into said opening generates said  
7 data signals representing information having a selected said correspondence with said code,  
8 obstructing said rotation of said plug from said rest orientation by engaging said tooth absent said  
9 selected correspondence, and accommodating passage of said tooth relative to said distal member  
10 during rotation of said plug from an orientation other than said rest orientation to said rest orientation.

1           18. (previously presented) The lock of claim 14, further comprising:

2           said detent comprising an arm arcuately engaging said cylinder and a tooth extending  
3 from said arm and through said slot; and

4           said distal member being oriented within said plug to move relative to said plug to  
5 accommodate passage of said tooth relative to said distal member during rotation of said plug from  
6 said rest orientation relative to the cylinder when a key while inserted into said opening generates said  
7 data signals representing information having a selected said correspondence with said code, and  
8 obstructing said rotation of said plug from said rest orientation by engaging said tooth absent said  
9 selected correspondence when said rotation is in a first direction, and accommodating said rotation  
10 of said plug from said rest orientation despite an absence of said selected correspondence when said  
11 rotation is in a second and opposite direction.

1           19. (previously presented) The lock of claim 14, further comprising:

2           said detent comprising an arm arcuately engaging said cylinder and a tooth extending  
3 from said arm and through said slot; and

4           said distal member being oriented within said plug in an engagement of said tooth to  
5 obstruct said rotation of said plug from said rest orientation, and to move relative to said plug from  
6 said engagement of said tooth obstructing said rotation of said plug from said rest orientation to an  
7 accommodation of passage of said tooth relative to said distal member during rotation of said plug  
8 from said rest orientation relative to the cylinder when a key while inserted into said opening  
9 generates said data signals representing information having a selected said correspondence with said  
10 code, and continuing said accommodation despite intermittent removal of the key from said opening.

1           20. (previously presented) The lock of claim 14, further comprising:

2           said detent comprising an arm arcuately engaging said cylinder and a tooth extending  
3 from said arm and through said slot; and

4           said distal member being oriented within said plug in an engagement of said tooth to  
5 obstruct said rotation of said plug from said rest orientation, and to move relative to said plug from  
6 said engagement of said tooth obstructing said rotation of said plug from said rest orientation to an

7 accommodation of passage of said tooth relative to said distal member during rotation of said plug  
8 from said rest orientation relative to the cylinder when a key while inserted into said keyway generates  
9 said data signals representing information having a selected said correspondence with said code, and  
10 continuing said accommodation despite intermittent removal of the key from said opening absent  
11 subsequent said generation of data signals representing information having said selected  
12 correspondence with said code.

1 21. (previously presented) The lock of claim 16, further comprising:

2 a sidebar positioned between said first base and said second base to provide  
3 reciprocation between a first location with said sidebar providing simultaneous engagement with said  
4 plug and said cylinder, and a second location releasing said plug for rotation relative to the cylinder;  
5 and

6 said electrical operator comprising an electrical solenoid borne by said plug, said distal  
7 member comprising an armature travelling in dependence upon said control signals between a third  
8 position relative to said exterior surface maintaining said simultaneous engagement and a fourth and  
9 different position relative to said exterior surface accommodating said reciprocation.

1 22. (previously presented) The lock of claim 17, further comprising:

2 a sidebar positioned between said first base and said second base to provide  
3 reciprocation between a first location with said sidebar providing simultaneous engagement with said  
4 plug and said cylinder, and a second location releasing said plug for rotation relative to the cylinder;  
5 and

6 said electrical operator comprising an electrical solenoid borne by said plug, said distal  
7 member comprising an armature travelling in dependence upon said control signals between a third  
8 position relative to said exterior surface maintaining said simultaneous engagement and a fourth and  
9 different position relative to said exterior surface accommodating said reciprocation.

1 23. (previously presented) The lock of claim 18, further comprising:

2 a sidebar positioned between said first base and said second base to provide  
3 reciprocation between a first location with said sidebar providing simultaneous engagement with said  
4 plug and said cylinder, and a second location releasing said plug for rotation relative to the cylinder;  
5 and

6 said electrical operator comprising an electrical solenoid borne by said plug, said distal  
7 member comprising an armature travelling in dependence upon said control signals between a third  
8 position relative to said exterior surface maintaining said simultaneous engagement and a fourth and  
9 different position relative to said exterior surface accommodating said reciprocation.

1 24. (previously presented) The lock of claim 19, further comprising:

2 a sidebar positioned between said first base and said second base to provide  
3 reciprocation between a first location with said sidebar providing simultaneous engagement with said  
4 plug and said cylinder, and a second location releasing said plug for rotation relative to the cylinder;  
5 and

6 said electrical operator comprising an electrical solenoid borne by said plug, said  
7 member comprising an distal armature travelling in dependence upon said control signals between  
8 a third position relative to said exterior surface maintaining said simultaneous engagement and a  
9 fourth and different position relative to said exterior surface accommodating said reciprocation.

1 34. (previously presented) The lock of claim 1, further comprised of said:

2 electrical operator comprising an electrical coil moving said distal member, to  
3 reciprocate said distal member between said first position and said second position in response to said  
4 control signals; and

5 said distal member bearing a circumferential surface blocking said radial movement  
6 of said sidebar while said distal member is in said second position, and accommodating said radial  
7 movement while said distal member is in said first position.

1 35. (previously presented) The lock of claim 6, further comprised of said:

2 electrical operator comprising an electrical coil moving said distal member, to  
3 reciprocate said distal member between said first position and said second position in response to said  
4 control signals; and

5 said distal member bearing a circumferential surface blocking said radial movement  
6 of said sidebar while said distal member is in said second position, and accommodating said radial  
7 movement while said distal member is in said first position.

1 36. (previously presented) The lock of claim 16, further comprising said distal member  
2 bearing a mass engaging said detent and blocking said rotation while said distal member is in said  
3 first position, and a groove through said mass accommodating relative passage between said distal  
4 member relative to said detent while said distal member is in said second position.

1 37. (previously presented) The lock of claim 16, further comprising said distal member  
2 bearing a mass exhibiting a first height accommodating relative passage between said distal member  
3 relative to said detent while said distal member is in said second position, and a second and greater  
4 height engaging and blocking said rotation while said distal member is in said first position.

1 38. (previously presented) The lock of claim 16, further comprising said distal member  
2 bearing a mass having a periphery engaging said detent and blocking said rotation while said distal  
3 member is in said first position, and a central variation in said mass relative to said periphery  
4 accommodating relative passage between said distal member and said detent while said distal member  
is in said second position.

1 46. (previously presented) A lock, comprising:  
2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;  
4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess;

6 a bar borne by said plug and rotatable with said plug relative to said shell, said bar  
7 being interposed between said shell and said cylinder plug to reciprocate generally along a radial  
8 plane between a first position engaging both said shell and said cylinder plug while obstructing  
9 rotation of said cylinder plug within said recess, and a second position accommodating said rotation,  
10 said cylinder plug comprising:

11 a first base and a second base separated by an axial length of said plug from said first  
12 base, said second base bearing means for supporting a cam; and

13 an electrical operator being electrically operable to respond to an electrical control  
14 signal by obstructing movement of said bar between said first position and said second position in  
15 response to a first state of said control signal and by moving within a second and different plane not  
16 coextensive with said radial plane in response to application of said control signal to accommodate  
17 said movement of said bar in response to a second and different state of said control signal.

1 47. (previously presented) The lock of claim 46, further comprised of said operator directly  
2 obstructing movement of said bar between said first position and said second position absent said  
3 control signal.

1 48. (previously presented) The lock of claim 46, further comprised of:

2 a logic circuit borne by said cylinder plug generating said control signal in response  
3 to a comparison between a code set within said logic circuit and a data signal applied to said logic  
4 circuit; and

5 said electrical operator moving to accommodate said movement by said bar in response  
6 to said control signal.

1 49. (previously presented) The lock of claim 46, further comprised of a locking mechanism  
2 borne by said cylinder plug, said cylinder plug being perforated by an aperture admitting reciprocal  
3 travel of a key relative to said locking mechanism, and said locking mechanism obstructing  
4 movement of said cylinder plug relative to said shell absent the key exhibiting a selected relation with



5 said locking mechanism.

1 50. (previously presented) The lock of claim 46, further comprised of a plurality of electrical  
2 conductors borne by said lock to engage a circuit in a key inserted into said cylinder plug.

1 51. (previously presented) The lock of claim 46, further comprised of a power source  
2 energizing said electric operator to move during said second and different state of said control signal,  
3 positioned to rotate with said cylinder plug relative to said shell.

1 52. (previously presented) The lock of claim 51, further comprised of said plug containing  
2 a keyway, and said power source being mounted on a key insertable into said keyway.

1 54. (previously presented) The lock of claim 46, further comprised of:  
2 said cylinder plug containing a keyway;  
3 a memory borne by said cylinder plug and storing a code; and  
4 a logic circuit comprising a memory storing a code, said circuit being borne by said  
5 cylinder plug and generating said control signal in dependence upon correspondence between said  
6 code and data borne by a key insertable within said keyway.

1 56. (previously presented) A lock, comprising:  
2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;  
4 a plug rotatable around said longitudinal axis while resident within said hollow recess;  
5 an elongate member interposed between said shell and said plug to travel generally  
6 along a radial direction between a first position where said elongate member obstructs rotation  
7 between said shell and said plug by making a direct simultaneous engagement of both said shell and  
8 said plug, and in response to a torque that is externally applied to said plug and causes rotation of said  
9 plug within said shell, exiting said recess and traveling to a second position while maintaining a

10 second simultaneous engagement of said shell and said plug that accommodates said rotation;

11 said plug comprising:

12 a first base perforated by an aperture, and a second base separated by an axial  
13 length of said plug from said first base, said second base bearing means for supporting a cam;

14 a logic circuit borne by said plug and rotatable with said plug, conveying said  
15 data signal between said aperture to said logic circuit; and

16 an electrical operator responding to said control signals by moving  
17 independently of said travel by said elongate member in a second direction within a plane that  
18 maintains said simultaneous engagement by not aligned with said radial direction between one  
19 of a first orientation obstructing said travel and relative operable movement between said shell  
20 and said plug while said electrical operator is contained wholly within said plug, and a second  
21 and different orientation accommodating said travel and said relative operable movement  
22 between said shell and said plug, and another of said first orientation and said second  
23 orientation.

1 64. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting a cam;

7 a sidebar interposed between said shell and said cylinder plug to travel generally along  
8 a radial plane between a first position engaging both said shell and said plug while obstructing  
9 rotation of said cylinder plug within said recess, and a second position accommodating said rotation;

10 a logic circuit generating an electrical control signal in response to a comparison  
11 between a code set within said logic circuit and a data signal applied to said logic circuit;

12 an electrical conductor provided by said plug, conveying said data signal to said logic  
13 circuit; and

14 an electrical operator borne by said cylinder plug and rotatable with said plug, said  
15 electrical operator being electrically operable to respond to said control signal by moving in a  
16 different plane independently of said travel by said sidebar, between one of a first orientation  
17 providing obstruction of said travel and a second and different orientation accommodating said travel,  
18 and another of said first orientation and said second orientation;

19 said sidebar having a first portion that is positioned to be optionally blocked by another  
20 component of said lock functioning independently of said electrical operator to prevent said travel  
21 of said sidebar, and a second portion that is positioned to be blocked from said travel by said sidebar  
22 to said second position whenever said electrical operator is within said first orientation, and a second  
23 portion that is positioned to be optionally blocked by another component of said lock.

1 65. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting a cam;

7 a bar interposed between said shell and said cylinder plug to travel generally along a  
8 radial plane between a first position engaging both said shell and said plug while obstructing rotation  
9 of said cylinder plug within said recess, and a second position accommodating said rotation;

10 a logic circuit generating a control signal in response to a comparison between a code  
11 set within said logic circuit and a data signal applied to said logic circuit;

12 an electrical conductor provided by said plug, conveying said data signal to said logic  
13 circuit; and

14 an electrical operator comprising an armature, said armature being borne by said  
15 cylinder plug and rotating around said longitudinal axis with said plug, said electrical operator being  
16 electrically operable to respond to said control signal by moving independently of said travel, between  
17 one of a first orientation providing obstruction of said travel and a second and different orientation

18 accommodating said travel, and another of said first orientation and said second orientation.

1 66. (previously presented) The lock of claim 65, with said electrical operator further  
2 comprising a coil of an electrically conducting material that is borne by said cylinder plug and wound  
3 to drive said armature to move from one of said first and second orientations to the other of said first  
4 and second orientations in response to said control signal.

1 67. (previously presented) The lock of claim 65, with said electrical operator further  
2 comprising a coil of an electrically conducting material that is borne by said cylinder plug and wound  
3 to drive said armature to move from said first orientation to said second orientation in response to said  
4 control signal.

1 68. (previously presented) The lock of claim 65, with electrical operator further comprising  
2 a coil of an electrically conducting material that is borne by said cylinder plug and wound to drive  
3 said armature to rotate around an arc in response to said control signal.

1 69. (previously presented) The lock of claim 65, with said electrical operator further  
2 comprising a coil of an electrically conducting material that is borne by said cylinder plug and wound  
3 to drive said armature to reciprocate along a radial axis that is transverse to said radial plane in  
4 response to said control signal.

1 70. (previously presented) A lock, comprising:  
2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;  
4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting a cam;  
7 a bar interposed between said shell and said cylinder plug to travel generally along a

8 radial plane between a first position engaging both said shell and said plug while obstructing rotation  
9 of said cylinder plug within said recess, and a second position accommodating said rotation;

10 a logical circuit generating said control signal in response to a comparison between  
11 a code set within said logic circuit and a data signal applied to said logic circuit;

12 an electrical conductor provided by said plug, conveying said data signal to said logic  
13 circuit; and

14 an electrical operator borne by said cylinder plug and rotatable with said plug, said  
15 electrical operator being electrically operable to respond to an electrical control signal applied to said  
16 electrical operator by moving along a geometrical construct other than to said radial plane between  
17 one of a first orientation providing obstruction of said travel and a second and different orientation  
18 accommodating said travel, and another of said first orientation and said second orientation.

1 75. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting a cam;

7 a bar interposed between said shell and said cylinder plug to travel generally along a  
8 radial plane between a first position engaging both said shell and said plug while obstructing rotation  
9 of said cylinder plug within said recess, and a second position accommodating said rotation;

10 a logic circuit generating said control signal in response to a comparison between a  
11 code set within said logic circuit and a data signal applied to said logic circuit;

12 an electrical conductor provided by said plug, conveying said data signal to said logic  
13 circuit; and

14 an electrical operator borne by said cylinder plug and rotatable with said plug, said  
15 electrical operator being electrically operable to respond to said control signal by moving along a  
16 radial axis that is transverse to said radial plane, between a first orientation providing obstruction of

17 said travel and a second and different orientation accommodating said travel.

1 76. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting a cam;

7 a logic circuit generating said control signal in response to a comparison between a  
8 code set within said logic circuit and a data signal applied to said logic circuit;

9 an electrical conductor provided by said plug, conveying said data signal to said logic  
10 circuit;

11 an elongate bar exhibiting a greatest longitudinal dimension along a second axis that  
12 extends transversely to said first base and to said second base, said bar being interposed between said  
13 shell and said cylinder plug to travel generally along a radial axis that is transverse to said second  
14 axis, between a first position engaging both said shell and said plug while obstructing rotation of said  
15 cylinder plug within said recess, and a second position accommodating said rotation; and

16 an electrical operator borne by said cylinder plug and rotatable with said plug, said  
17 electrical operator being electrically operable to respond to said control signal by moving along said  
18 radial axis between one of a first orientation providing obstruction of said travel and a second and  
19 different orientation accommodating said travel, and another of said first orientation and said second  
20 orientation.

1 77. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial

length of said cylinder plug from said first base, said second base bearing means for supporting a cam;  
a logic circuit generating said control signal in response to a comparison between a code set within said logic circuit and a data signal applied to said logic circuit;  
an electrical conductor provided by said plug, conveying said data signal to said logic circuit;

an elongate bar exhibiting a greatest longitudinal dimension along a second axis that extends transversely to said first base and to said second base, said bar being interposed between said shell and said cylinder plug to travel generally along a radial axis that is radial to said cylinder plug and transverse to said second axis, between a first position engaging both said shell and said plug while obstructing rotation of said cylinder plug within said recess, and a second position accommodating said rotation; and

an electrical operator borne by said cylinder plug and rotatable with said plug, said electrical operator being electrically operable to respond to a control signal by moving between one of a first orientation providing obstruction of said travel and a second and different orientation accommodating said travel, and another of said first orientation and said second orientation.

85. (previously presented) An electromechanical lock cylinder, comprising:

an outer shell having a bore formed therein and a cavity extending from the bore into the shell;

a barrel disposed within the bore in the shell and being rotatable relative thereto;

a side bar cooperating between the shell and the barrel for selectively permitting and blocking rotation of the barrel with respect to the shell, the side bar having a first portion engaging the barrel and a second portion removably received in the cavity in the shell, the side bar being movable relative to the barrel;

wherein at least one electromechanical locking member is disposed within the barrel and is positionable in a barrel blocking position blocking rotation of the barrel with respect to the shell, and also is positionable in a non-barrel blocking position permitting the side bar to be moved relative to the cavity in the shell to rotate the barrel with respect to the shell;

13 an electronically powered drive mechanism located within the barrel and cooperating  
14 with the electromechanical locking member to selectively move the locking member from the barrel  
15 blocking position to the non-barrel blocking position in which the side bar moves out of the cavity  
16 and engages the locking member; and

17 control means for activating the electronically powered drive mechanism in response  
18 to an authorized attempt to operate the lock cylinder.

1 88. (previously presented) A lock cylinder according to claim 85, wherein the first portion  
2 of the side bar is an outer edge and the second portion is an opposite inner edge, and when the at least  
3 one locking member is in said barrel blocking position the outer edge of the side bar is received in  
4 the cavity formed in the shell, and wherein the at least one locking member has a groove which  
5 receives the inner edge of the side bar when the at least one locking member is in said non-barrel  
6 blocking position.

1 89. (previously presented) A rotatable lock barrel for insertion into a lock cylinder having  
2 a bore formed therein, the barrel comprising:

3 an elongated, generally cylindrically shaped barrel member having an exterior configured for  
4 receipt in a bore of a lock cylinder and an interior containing an electromechanical locking member,  
5 the barrel member having a recess formed therein;

6 wherein the locking member is disposed in the recess of the barrel member and is substantially  
7 entirely contained within the barrel member, the locking member including a groove and the locking  
8 member being movable to a position in which the groove of the locking member is placed in an  
9 alignment;

10 the recess in said barrel member being configured to receive at least a portion of a movable  
11 side bar of a lock cylinder to permit the side bar to move into and out of engagement with the groove  
12 of the locking member for selectively permitting and blocking rotation of the barrel member with  
13 respect to a lock cylinder when positioned therein;

14 an electronically powered drive mechanism located within the barrel member for moving the



15 electromechanical locking member to a position in which the groove of the locking member is in said  
16 alignment.

1 90. (previously presented) A process of retrofitting a mechanical cylinder lock to form an  
2 electromechanical cylinder lock, the process comprising steps of:

3 providing a mechanical cylinder lock including an outer shell with a bore, a first rotatable  
4 barrel located in the bore, and a side bar for preventing and permitting rotation of the barrel within  
5 the bore in the shell;

6 removing the first barrel from the shell;

7 providing an electronically powered rotatable barrel having an exterior adapted to substantially  
8 correspond to the bore in the shell, and including:

9 at least one electromechanical locking member disposed in the barrel, the electromechanical  
10 locking member being positionable to permit the side bar to engage the locking member in a non-  
11 barrel blocking position which permits the barrel to rotate with respect to the shell, and the  
12 electromechanical locking member also being positionable in a barrel blocking position which blocks  
13 rotation of the barrel with respect to the shell; and

14 an electronically powered drive mechanism cooperating with the electromechanical locking  
15 member to selectively move the locking member from the barrel blocking position to the non-barrel  
16 blocking position in which the side bar engages the locking member to rotate the barrel and operate  
17 the lock; and

18 securing the electronically powered rotatable barrel in the bore in the shell to form an  
19 electromechanical cylinder lock, the lock including control means carried by at least one of the barrel  
20 and bore for energizing the electronically powered drive mechanism in response to an authorized  
21 attempt to open the lock.

1 91. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base perforated by a keyway and a second base  
6 separated by an axial length of said cylinder plug from said first base, said second base disposed to  
7 support a cam;

8 a bar interposed between said shell and said cylinder plug to reciprocate generally  
9 along a radial plane between a first position engaging both said shell and said plug while obstructing  
10 rotation of said cylinder plug within said recess, and a second position accommodating said rotation  
11 when a torque is externally applied to said keyway to rotate said cylinder plug within said shell;

12 a locking mechanism borne by and rotating with said cylinder plug, said locking  
13 mechanism being interposed between said cylinder plug and said bar, and exhibiting a first disposition  
14 hindering said reciprocation and, in response to insertion of a key in physical conformance to said  
15 locking mechanism, exhibiting a second and different disposition accommodating said reciprocation;  
16 and

17 an electrical operator borne by said cylinder plug and rotatable with said cylinder plug,  
18 said electrical operator being electrically operable to respond to a control signal by moving  
19 independently of said bar between a first orientation providing obstruction of said reciprocation by  
20 said bar and a second and different orientation removing said obstruction.

1 92. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess;

6 a bar interposed between said shell and said cylinder plug to extend generally along  
7 a radial plane between a first state engaging both said shell and said plug while obstructing rotation  
8 of said cylinder plug within said recess, and a second state accommodating said rotation;

9 said cylinder plug comprising:

10 a first base and a second base separated by an axial length of said cylinder plug from

11 said first base, said second base configured to support a cam; and

12 an electrical operator comprising an armature borne by said cylinder plug and rotatable  
13 with said cylinder plug, said electrical operator being electrically operable to respond to a  
14 control signal by moving said armature independently of said bar, between one of a first  
15 orientation providing obstruction of said rotation during said first state and a second  
16 orientation accommodating independent relative movement between said bar and said cylinder  
17 plug, and another of said first orientation and said second orientation.

1 93. (previously presented) The lock of claim 92, further comprised of:

2 a coil wound to provide conduction of an electrical current in response to said control  
3 signal; and

4 said armature comprising an exterior surface exhibiting a rest position between said  
5 shell and said cylinder plug, said armature obstructing said rotation absent said conduction,  
6 accommodating said rotation during said conduction, and accommodating said rotation until said  
7 rotation returns said armature to said rest position after termination of said conduction.

1 94. (previously presented) The lock of claim 92, further comprised of:

2 a coil wound to provide conduction of an electrical current in response to said control  
3 signal; and

4 said armature comprising an exterior surface exhibiting a rest position with said  
5 exterior surface extending between said shell and said cylinder plug while said cylinder plug is in  
6 alignment with said shell in a locked condition, said armature obstructing said rotation absent said  
7 conduction, accommodating said rotation during said conduction by withdrawing from said shell and  
8 wholly into said cylinder plug, accommodating said rotation until said rotation returns said armature  
9 to said rest position after termination of said conduction, and resuming said rest position when said  
10 rotation restores said alignment.

1 95. (previously presented) The lock of claim 92, further comprised of:

2 a coil wound to provide conduction of an electrical current in response to said control  
3 signal; and

4 said armature comprising an exterior surface exhibiting a rest position between said  
5 bar and said cylinder plug, said armature obstructing said rotation absent said conduction, said  
6 armature accommodating said rotation during said conduction, and said armature accommodating said  
7 rotation until said rotation returns said armature to said rest position after termination of said  
8 conduction.

1 96. (previously presented) The lock of claim 92, further comprised of:

2 a coil wound to provide conduction of an electrical current in response to said control  
3 signal; and

4 said armature comprising an exterior surface exhibiting a rest position with said first  
5 orientation while said exterior surface is interposed between said bar and said cylinder plug and  
6 obstructs said rotation absent said conduction, said armature assuming said second orientation,  
7 withdrawing from said interposition and accommodating said rotation during said conduction, and  
8 said armature accommodating said rotation until said rotation returns said armature to said rest  
9 position with said first orientation after termination of said conduction.

1 97. (previously presented) The lock of claim 92, further comprised of:

2 a coil wound to provide conduction of an electrical current in response to said control  
3 signal; and

4 said armature comprising an exterior surface exhibiting a rest position with said first  
5 orientation while said exterior surface is interposed between said bar and said cylinder plug and  
6 obstructs said rotation absent said conduction, said armature assuming said second orientation,  
7 withdrawing from said interposition and accommodating said rotation during said conduction, and  
8 said armature maintaining said second orientation and accommodating said rotation after said rotation  
9 returns said armature to said rest position after termination of said conduction.

1           98. (previously presented) The lock of claim 92, further comprised of:

2                   a coil wound to provide conduction of an electrical current in response to said control  
3 signal; and

4                   said armature comprising an exterior surface exhibiting a rest position with said first  
5 orientation while said exterior surface is interposed between said bar and said cylinder plug and  
6 obstructs said rotation absent said conduction, said armature assuming said second orientation,  
7 withdrawing from said interposition and accommodating said rotation during said conduction, said  
8 armature maintaining said second orientation and accommodating said rotation after said rotation  
9 returns said armature to said rest position after termination of said conduction, and said armature  
10 resuming said first orientation during renewal of said conduction subsequent to said termination.

1           99. (previously presented) The lock of claim 92, further comprised of:

2                   a coil wound to provide conduction of an electrical current in response to said control  
3 signal; and

4                   said armature comprising an exterior surface exhibiting a rest position while in said  
5 first orientation absent said conduction with a first thickness of said exterior surface interposed  
6 between said bar and said cylinder plug and with said cylinder plug in alignment with said shell in  
7 a locked position, said armature exhibiting said second orientation and accommodating said rotation  
8 during said conduction with a second and lesser thickness of said exterior surface permitting  
9 movement of said bar relative to said cylinder plug, and said armature accommodating said rotation  
10 until said rotation allows said bar to reverse said relative movement and said armature to return to said  
11 rest position after termination of said conduction.

1           100. (previously presented) The lock of claim 92, further comprised of:

2                   a logic circuit borne by said cylinder plug, generating said control signal in response  
3 to a comparison between a code set within said logic circuit and a data signal applied to said logic  
4 circuit; and

5                   said electrical operator moving between said second orientation and said first

6 orientation in response to said control signal.

1 101. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising:

6 a first base and a second base separated by a mass and an axial length of said cylinder  
7 plug from said first base, said second base being configured to support a cam, said mass  
8 comprising a main body exhibiting a major exterior circumferential surface and a cylindrical  
9 sector exhibiting a lesser and minor exterior circumferential surface supplementing said main  
10 body to endow said cylinder plug with a substantially cylindrical exterior shape that is  
11 removably insertable within said hollow recess;

12 an electrical operator encased within said cylindrical sector and rotatable with said  
13 cylinder plug, said electrical operator being electrically operable to respond to a control signal  
14 by moving between one of a first orientation obstructing rotation of said cylinder plug relative  
15 to said shell and a second and different orientation accommodating said rotation, and another  
16 of said first orientation and said second orientation; and

17 a logic circuit encased within said cylindrical sector generating said control signal in  
18 response to a comparison between a code set within said logic circuit and a data signal applied  
19 to said logic circuit.

1 102. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising:

6 a first base and a second base separated by a mass and an axial length of said cylinder

7 plug from said first base, said second base bearing means for supporting a cam, said mass  
8 comprising a main body exhibiting a major exterior circumferential surface and a cylindrical  
9 sector forming a module exhibiting a lesser and minor exterior circumferential surface  
10 supplementing said main body to endow said cylinder plug with a substantially cylindrical  
11 exterior shape that is removably insertable within said hollow recess; and

12 an electrical operator encased within and borne by said axial cylindrical sector, and  
13 rotatable with said cylinder plug, said electrical operator being electrically operable to respond  
14 to a control signal by moving between one of a first orientation causing obstruction of rotation  
15 of said cylinder plug within said shell and a second orientation accommodating said rotation,  
16 and another of said first orientation and said second orientation;

17 a bar interposed between said shell and said cylinder plug, spaced-apart from said  
18 electrical operator and movable independently of said electrical operator between a first position  
19 obstructing said rotation and a second and different position accommodating said rotation.

1 103. (previously presented) The lock cylinder of claim 85, further comprising:

2 said side bar comprises a major elongate surface that defines a plane extending  
3 approximately radially relative to said barrel; and

4 said locking member moving on an axis that is approximately perpendicular to said  
5 plane.

1 104. (previously presented) The lock cylinder of claim 89, further comprising:

2 a side bar that travels along a plane that extends approximately radially relative to said  
3 barrel; and

4 said locking member moving on an axis that is approximately perpendicular to said  
5 plane.

1 105. (previously presented) The process of claim 90, further comprising:

2 orienting said side bar to travel along a plane that extends approximately radially

3 relative to said electronically powered rotatable barrel when engaging said locking member; and  
4 positioning said locking member to move on an axis that is approximately  
5 perpendicular to said plane when said locking member is selectively moved from said barrel blocking  
6 position to said non-barrel blocking position.

1 106. (previously presented) The lock of claim 14, further comprising said bar engaging both  
2 said shell and said plug during said movement between said plug and said cylinder.

1 108. (previously presented) The lock of claim 46, further comprising said bar engaging both  
2 said shell and said cylinder plug during said rotation.

1 109. (previously presented) The lock of claim 64, further comprising said sidebar engaging  
2 both said shell and said cylinder plug during said rotation.

1 111. (previously presented) The lock of claim 70, further comprising said bar engaging both  
2 said shell and said cylinder plug during said rotation.

1 112. (previously presented) The lock of claim 75, further comprising said bar engaging both  
2 said shell and said cylinder plug during said rotation.

1 113. (previously presented) ) The lock of claim 76, further comprising said bar engaging both  
2 said shell and said cylinder plug during said rotation.

1 114. (previously presented) The lock of claim 77, further comprising said bar engaging both  
2 said shell and said cylinder plug during said rotation.

1 115. (previously presented) The lock of claim 85, further comprising said side bar engaging  
2 both said shell and said barrel during said rotation.



1           116. (previously presented) The lock of claim 91, further comprising said bar engaging both  
2           said shell and said cylinder plug during said rotation.

1           119. (previously presented) The lock cylinder of claim 85, in which said side bar moves out  
2           of the cavity and engages the locking member to rotate the barrel and operate the lock.

1           120. (previously presented) A rotatable lock barrel for insertion into a lock cylinder having  
2           a bore formed therein, the barrel comprising:

3           an elongated, generally cylindrically shaped barrel member having an exterior configured for  
4           receipt in a bore of a lock cylinder and an interior containing a plurality of electromechanical locking  
5           members, the barrel member having a recess formed therein;

6           wherein the locking members are disposed in the recess of the barrel member and are  
7           substantially entirely contained within the barrel member, each of the locking members including a  
8           groove and the locking members being movable to a position in which the grooves of the locking  
9           members are aligned;

10          the recess in said barrel member being configured to receive at least a portion of a movable  
11          side bar of a lock cylinder to permit the side bar to move into and out of engagement with the grooves  
12          of the locking members for selectively permitting and blocking rotation of the barrel member with  
13          respect to a lock cylinder when positioned therein;

14          an electronically powered drive mechanism located within the barrel member for moving the  
15          electromechanical locking members to a position in which the grooves of the locking members are  
16          aligned.

1           121. (previously presented) A lock, comprising:

2           a shell containing a hollow recess defining a longitudinal axis and an interior  
3           cylindrical surface;

4           a cylinder plug rotatable around said longitudinal axis while resident within said

5 hollow recess;

6 a bar interposed between said shell and said cylinder plug detent extending radially  
7 from a second recess within said shell into a passage within said cylinder plug to create an obstruction  
8 to rotation of said cylinder plug within said hollow recess;

9 said cylinder plug comprising:

10 a first base and a second base separated by an axial length of said cylinder plug from  
11 said first base, said second base configured to support a cam; and

12 an electrical operator borne by said cylinder plug and rotatable with said cylinder plug,  
13 said electrical operator being electrically operable to respond to a control signal by moving  
14 independently of said detent between one of a first orientation accommodating relative  
15 movement between said detent and said cylinder plug and a second and different orientation  
16 maintaining obstruction of said relative movement by engaging said detent, and another of  
17 said first orientation and said second orientation.

## **X. APPENDIX II**

### **Claims Under Appeal**

**(Amendments to claims 1, 6, 11, 14, 21-24, 65, 70, 75, 92, 101, 102, and 121 and cancellation of claims 85-89 set forth in the Amendment under 37 C.F.R. §1.116(b) concurrently filed with this Appeal Brief have been incorporated herein.)**

**Claims 1-24, 34-38, 46-52, 54, 56, 64-70, 75-77, 85, 88-106, 108, 109, 111-116, 119-121**

1           1. (previously presented) A plug, comprising:

2                   a first base bearing a keyway providing a first electrical conductor and an orifice  
3 spaced-apart from and separated by a mass of said plug from said keyway;

4                   a second base separated by an axial length of said plug from said first base, said second  
5 base disposed to support a cam, said mass being perforated by a plurality of radially oriented apertures  
6 forming an array;

7                   an exterior surface extending between and engaging said first base and said second  
8 base;

9                   a sidebar positioned between said first base and said second base to reciprocate  
10 between a first location with said sidebar simultaneously engaging said plug and a cylinder  
11 surrounding said plug, and a second location releasing said plug for relative movement between the  
12 cylinder and said plug;

13                  a locking mechanism disposed within said apertures to move relative to said plug in  
14 response to a key inserted into said keyway to accommodate reciprocation of said sidebar relative to  
15 said plug and rotation of said plug relative to the cylinder when the key while inserted into said  
16 keyway engages in a selected relation with said locking mechanism, and obstructing said  
17 reciprocation absent said selected relation;

18                  a second electrical conductor terminating with an electrical contact exposed to an  
19 exterior of said first base through said orifice;

20                  an electronic logic circuit borne by said plug while coupled to receive electrical data  
21 signals via said first and second electrical conductors, and generating control signals in dependence

22 upon said electrical power and data signals; and

23 an electrical operator disposed within one of said apertures, said operator having a  
24 distal member travelling in dependence upon said control signals between a first position relative to  
25 said exterior surface obstructing said relative movement by engaging a detent protruding from the  
26 cylinder, and a second and different position relative to said exterior surface accommodating said  
27 relative movement.

1 2. (previously presented) The plug of claim 1, comprising said locking mechanism, logic  
2 circuit and electrical operator simultaneously experiencing said rotation relative to the cylinder  
3 whenever said plug rotates relative to the cylinder.

1 3. (previously presented) The plug of claim 1, comprising said locking mechanism, logic  
2 circuit and electrical operator being wholly within the cylinder and travelling with said plug whenever  
3 said plug moves relative to the cylinder.

1 4. (previously presented) The plug of claim 1, with said electrical operator maintaining said  
2 distal member within said plug with said distal member extended not beyond said exterior surface  
3 while said distal member is in said first position, and maintaining said distal member in concurrent  
4 engagement with said plug and with the detent while said distal member is in said first position.

1 5. (previously presented) The plug of claim 1, with said electrical operator maintaining said  
2 distal member within said plug with said distal member extending not beyond said exterior surface  
3 while said distal member is in said first position, and moving said distal member radially between  
4 relative to said exterior surface in dependence upon said control signals.

1 6. (previously presented) A lock, comprising:  
2 a cylinder containing a hollow recess defining a longitudinal axis and a stationary  
3 detent extending from said cylinder;

4 a plug bearing a plurality of open radially oriented apertures forming an array, said  
5 plug being rotatable around said longitudinal axis while resident within said hollow recess, said plug  
6 comprising:

7 a first base bearing a keyway providing a first electrical conductor and an  
8 orifice spaced-apart from and separated by a mass of said plug from said keyway;

9 a second base separated by an axial length of said plug from said first base,  
10 said second base disposed to support a cam;

11 an exterior surface extending between and engaging said first base and said  
12 second base;

13 a sidebar positioned between said first base and said second base to create an  
14 obstruction to relative movement between said cylinder and said plug;

15 a locking device disposed within said apertures to release an obstruction when the key  
16 while inserted into said keyway engages in a selected relation with said locking device, and to  
17 maintain said obstruction absent said selected relation;

18 a second electrical conductor terminating with an electrical contact exposed to an  
19 exterior of said first base through said orifice;

20 an electronic logic circuit borne by said plug, coupled to receive electrical data signals  
21 via said first and second electrical conductors, and generating control signals in dependence upon said  
22 electrical power and data signals; and

23 an electrical operator borne by said plug, disposed within one of said apertures, said  
24 operator having a distal member radially traveling along an axis transverse to said longitudinal axis,  
25 in dependence upon said control signals between a first position relative to said exterior surface by  
26 engaging said detent and thereby obstructing said movement in concert with said locking device and  
27 a second and different position relative to said exterior surface accommodating said movement.

1 7. (previously presented) The plug of claim 6, comprising said locking device, logic circuit  
2 and electrical operator simultaneously experiencing said rotation relative to the cylinder whenever  
3 said plug rotates relative to the cylinder.

1           8. (previously presented) The plug of claim 6, comprising said locking device, logic circuit  
2 and electrical operator being wholly within the cylinder and travelling with said plug whenever said  
3 plug moves relative to the cylinder.

1           9. (previously presented) The plug of claim 6, with said electrical operator maintaining said  
2 distal member within said plug with said distal member extended not beyond said exterior surface  
3 while said distal member is in said second position, and maintaining said distal member in  
4 engagement with said detent while said distal member is in said first position.

1           10. (previously presented) The plug of claim 6, with said electrical operator maintaining said  
2 distal member within said plug with said distal member extending not beyond said exterior surface  
3 while said distal member is in said first position.

1           11. (previously presented) A lock, comprising:  
2               a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface, said shell bearing a detent extending into said shell;  
4               a plug rotatable around said longitudinal axis while resident within said hollow recess,  
5 and a bar interposed between said shell and said plug generally along a radial plane engaging both  
6 said shell and said plug while obstructing rotation of said plug within said recess, said plug  
7 comprising:  
8                     a first base providing a first electrical conductor,  
9                     a second base separated by an axial length of said plug from said first base,  
10                    an exterior surface extending between and engaging said first base and said  
11 second base;  
12               a locking device responsive to a key inserted into said keyway accommodating  
13 relative movement between said shell and said plug when the key while inserted into said  
14 keyway engages in a selected relation with said locking device and obstructing said relative

15 movement absent said selected relation;

16 a second electrical conductor terminating with an electrical contact exposed  
17 to an exterior of said first base through said orifice;

18 an electronic logic circuit coupled to receive electrical data signals via said first  
19 and second electrical conductors, and generating control signals in dependence upon said data  
20 signals; and

21 an electrical operator having a distal member moving relative to said detent,  
22 in dependence upon said control signals between a first orientation relative to said exterior  
23 surface enabling said relative movement and a second and different orientation relative to said  
24 exterior surface obstructing said relative movement when said distal member at least partially  
25 surrounds said detent.

1 12. (previously presented) The plug of claim 1, further comprised of said:

2 electrical operator comprising an electrical coil coaxially aligned with said distal  
3 member, to move said distal member between said second position and said first position in response  
4 to said control signals; and

5 said distal member bearing a circumferential surface blocking said relative movement while  
6 said distal member is in said second position, and a variation in said circumferential surface  
7 accommodating said relative movement while said distal member is in said first position.

1 13. (previously presented) The plug of claim 6, further comprised of said:

2 electrical operator comprising an electrical coil coaxially aligned with said distal  
3 member, to move said distal member between said second position and said first position in response  
4 to said control signals; and

5 distal member bearing a circumferential surface engaging said detent while said distal  
6 member is in said second position, and a variation in said circumferential surface accommodating said  
7 relative movement while said distal member is in said first position.

1           14. (previously presented) A lock, comprising:

2                   a cylinder containing a hollow interior recess defining a longitudinal axis, and bearing  
3 a slot within said recess; and

4                   a plug rotatable from a rest orientation around said longitudinal axis while resident  
5 within said hollow recess relative to said cylinder; and

6                   a stationary detent positioned between a first end and second end while extending into  
7 said slot, and providing simultaneous engagement of said cylinder and said plug while said cylinder  
8 remains in said rest orientation;

9                   said plug comprising:

10                         said first end bearing an opening accommodating insertion of a key and  
11 providing a first electrical conductor;

12                         said second end separated by an axial length of said plug from said first end,  
13 said second end disposed to support a cam, said mass being perforated by an aperture;

14                         an exterior surface extending between said first end and said second end;

15                         retaining means oriented to retain a shank of a key inserted into said opening  
16 while said plug remains in an orientation other than said rest orientation relative to said  
17 cylinder, and to accommodate withdrawal of the key from said opening while said plug is in  
18 said rest orientation;

19                         a second electrical conductor terminating with an electrical contact exposed  
20 to an exterior of said first base through said orifice;

21                         an electronic logic circuit comprising a memory storing a code, said circuit  
22 being borne by said plug and coupled to receive electrical data signals via said first and  
23 second electrical conductors, said circuit generating control signals in dependence upon  
24 correspondence between said code and information borne by said data signals; and

25                         an electrical operator borne by said plug, said operator having a distal member  
26 travelling in dependence upon said control signals between a first position relative to said  
27 exterior surface maintaining engagement of said detent and a second and different position  
28 relative to said exterior surface accommodating movement between said plug and said



29 cylinder.

1 15. (previously presented) The lock of claim 14, further comprising:

2 said detent being borne by said cylinder; and

3 said distal member being oriented within said plug to move relative to said plug to  
4 accommodate rotation of said plug from said rest orientation relative to the cylinder when a key while  
5 inserted into said opening generates said data signals representing information having a selected said  
6 correspondence with said code, and obstructing said rotation absent said selected correspondence.

1 16. (previously presented) The lock of claim 14, further comprising:

2 said detent comprising an arm arcuately engaging said cylinder and a tooth extending  
3 from said arm and through said slot; and

4 said distal member being oriented within said plug to move relative to said plug to  
5 accommodate passage of said tooth relative to said distal member during rotation of said plug from  
6 said rest orientation relative to the cylinder when a key while inserted into said opening generates said  
7 data signals representing information having a selected said correspondence with said code, and  
8 obstructing said rotation of said plug from said rest orientation by engaging said tooth absent said  
9 selected correspondence.

1 17. (previously presented) The lock of claim 14, further comprising:

2 said detent comprising an arm arcuately engaging said cylinder and a tooth extending  
3 from said arm and through said slot; and

4 said distal member being oriented within said plug to move relative to said plug to  
5 accommodate passage of said tooth relative to said distal member during rotation of said plug from  
6 said rest orientation relative to the cylinder when a key while inserted into said opening generates said  
7 data signals representing information having a selected said correspondence with said code,  
8 obstructing said rotation of said plug from said rest orientation by engaging said tooth absent said  
9 selected correspondence, and accommodating passage of said tooth relative to said distal member

10 during rotation of said plug from an orientation other than said rest orientation to said rest orientation.

1 18. (previously presented) The lock of claim 14, further comprising:

2 said detent comprising an arm arcuately engaging said cylinder and a tooth extending  
3 from said arm and through said slot; and

4 said distal member being oriented within said plug to move relative to said plug to  
5 accommodate passage of said tooth relative to said distal member during rotation of said plug from  
6 said rest orientation relative to the cylinder when a key while inserted into said opening generates said  
7 data signals representing information having a selected said correspondence with said code, and  
8 obstructing said rotation of said plug from said rest orientation by engaging said tooth absent said  
9 selected correspondence when said rotation is in a first direction, and accommodating said rotation  
10 of said plug from said rest orientation despite an absence of said selected correspondence when said  
11 rotation is in a second and opposite direction.

1 19. (previously presented) The lock of claim 14, further comprising:

2 said detent comprising an arm arcuately engaging said cylinder and a tooth extending  
3 from said arm and through said slot; and

4 said distal member being oriented within said plug in an engagement of said tooth to  
5 obstruct said rotation of said plug from said rest orientation, and to move relative to said plug from  
6 said engagement of said tooth obstructing said rotation of said plug from said rest orientation to an  
7 accommodation of passage of said tooth relative to said distal member during rotation of said plug  
8 from said rest orientation relative to the cylinder when a key while inserted into said opening  
9 generates said data signals representing information having a selected said correspondence with said  
10 code, and continuing said accommodation despite intermittent removal of the key from said opening.

1 20. (previously presented) The lock of claim 14, further comprising:

2 said detent comprising an arm arcuately engaging said cylinder and a tooth extending  
3 from said arm and through said slot; and

4           said distal member being oriented within said plug in an engagement of said tooth to  
5 obstruct said rotation of said plug from said rest orientation, and to move relative to said plug from  
6 said engagement of said tooth obstructing said rotation of said plug from said rest orientation to an  
7 accommodation of passage of said tooth relative to said distal member during rotation of said plug  
8 from said rest orientation relative to the cylinder when a key while inserted into said keyway generates  
9 said data signals representing information having a selected said correspondence with said code, and  
10 continuing said accommodation despite intermittent removal of the key from said opening absent  
11 subsequent said generation of data signals representing information having said selected  
12 correspondence with said code.

1           21. (previously presented) The lock of claim 16, further comprising:

2           a sidebar positioned between said first end and said second end to provide  
3 reciprocation between a first location with said sidebar providing simultaneous engagement with said  
4 plug and said cylinder, and a second location releasing said plug for rotation relative to the cylinder;  
5 and

6           said electrical operator comprising an electrical solenoid borne by said plug, said distal  
7 member comprising an armature travelling in dependence upon said control signals between a third  
8 position relative to said exterior surface maintaining said simultaneous engagement and a fourth and  
9 different position relative to said exterior surface accommodating said reciprocation.

1           22. (previously presented) The lock of claim 17, further comprising:

2           a sidebar positioned between said first end and said second end to provide  
3 reciprocation between a first location with said sidebar providing simultaneous engagement with said  
4 plug and said cylinder, and a second location releasing said plug for rotation relative to the cylinder;  
5 and

6           said electrical operator comprising an electrical solenoid borne by said plug, said distal  
7 member comprising an armature travelling in dependence upon said control signals between a third  
8 position relative to said exterior surface maintaining said simultaneous engagement and a fourth and

different position relative to said exterior surface accommodating said reciprocation.

23. (previously presented) The lock of claim 18, further comprising:

a sidebar positioned between said first end and said second end to provide reciprocation between a first location with said sidebar providing simultaneous engagement with said plug and said cylinder, and a second location releasing said plug for rotation relative to the cylinder; and

said electrical operator comprising an electrical solenoid borne by said plug, said distal member comprising an armature travelling in dependence upon said control signals between a third position relative to said exterior surface maintaining said simultaneous engagement and a fourth and different position relative to said exterior surface accommodating said reciprocation.

24. (previously presented) The lock of claim 19, further comprising:

a sidebar positioned between said first end and said second end to provide reciprocation between a first location with said sidebar providing simultaneous engagement with said plug and said cylinder, and a second location releasing said plug for rotation relative to the cylinder; and

said electrical operator comprising an electrical solenoid borne by said plug, said member comprising an distal armature travelling in dependence upon said control signals between a third position relative to said exterior surface maintaining said simultaneous engagement and a fourth and different position relative to said exterior surface accommodating said reciprocation.

34. (previously presented) The lock of claim 1, further comprised of said:

electrical operator comprising an electrical coil moving said distal member, to reciprocate said distal member between said first position and said second position in response to said control signals; and

said distal member bearing a circumferential surface blocking said radial movement of said sidebar while said distal member is in said second position, and accommodating said radial

7 movement while said distal member is in said first position.

1 35. (previously presented) The lock of claim 6, further comprised of said:

2 electrical operator comprising an electrical coil moving said distal member, to  
3 reciprocate said distal member between said first position and said second position in response to said  
4 control signals; and

5 said distal member bearing a circumferential surface blocking said radial movement  
6 of said sidebar while said distal member is in said second position, and accommodating said radial  
7 movement while said distal member is in said first position.

1 36. (previously presented) The lock of claim 16, further comprising said distal member  
2 bearing a mass engaging said detent and blocking said rotation while said distal member is in said  
3 first position, and a groove through said mass accommodating relative passage between said distal  
4 member relative to said detent while said distal member is in said second position.

1 37. (previously presented) The lock of claim 16, further comprising said distal member  
2 bearing a mass exhibiting a first height accommodating relative passage between said distal member  
3 relative to said detent while said distal member is in said second position, and a second and greater  
4 height engaging and blocking said rotation while said distal member is in said first position.

1 38. (previously presented) The lock of claim 16, further comprising said distal member  
2 bearing a mass having a periphery engaging said detent and blocking said rotation while said distal  
3 member is in said first position, and a central variation in said mass relative to said periphery  
4 accommodating relative passage between said distal member and said detent while said distal member  
is in said second position.

1 46. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior

3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess;

6 a bar borne by said plug and rotatable with said plug relative to said shell, said bar  
7 being interposed between said shell and said cylinder plug to reciprocate generally along a radial  
8 plane between a first position engaging both said shell and said cylinder plug while obstructing  
9 rotation of said cylinder plug within said recess, and a second position accommodating said rotation,  
10 said cylinder plug comprising:

11 a first base and a second base separated by an axial length of said plug from said first  
12 base, said second base bearing means for supporting a cam; and

13 an electrical operator being electrically operable to respond to an electrical control  
14 signal by obstructing movement of said bar between said first position and said second position in  
15 response to a first state of said control signal and by moving within a second and different plane not  
16 coextensive with said radial plane in response to application of said control signal to accommodate  
17 said movement of said bar in response to a second and different state of said control signal.

1 47. (previously presented) The lock of claim 46, further comprised of said operator directly  
2 obstructing movement of said bar between said first position and said second position absent said  
3 control signal.

1 48. (previously presented) The lock of claim 46, further comprised of:

2 a logic circuit borne by said cylinder plug generating said control signal in response  
3 to a comparison between a code set within said logic circuit and a data signal applied to said logic  
4 circuit; and

5 said electrical operator moving to accommodate said movement by said bar in response  
6 to said control signal.

1 49. (previously presented) The lock of claim 46, further comprised of a locking mechanism

2 borne by said cylinder plug, said cylinder plug being perforated by an aperture admitting reciprocal  
3 travel of a key relative to said locking mechanism, and said locking mechanism obstructing  
4 movement of said cylinder plug relative to said shell absent the key exhibiting a selected relation with  
5 said locking mechanism.

1 50. (previously presented) The lock of claim 46, further comprised of a plurality of electrical  
2 conductors borne by said lock to engage a circuit in a key inserted into said cylinder plug.

1 51. (previously presented) The lock of claim 46, further comprised of a power source  
2 energizing said electric operator to move during said second and different state of said control signal,  
3 positioned to rotate with said cylinder plug relative to said shell.

1 52. (previously presented) The lock of claim 51, further comprised of said plug containing  
2 a keyway, and said power source being mounted on a key insertable into said keyway.

1 54. (previously presented) The lock of claim 46, further comprised of:  
2 said cylinder plug containing a keyway;  
3 a memory borne by said cylinder plug and storing a code; and  
4 a logic circuit comprising a memory storing a code, said circuit being borne by said  
5 cylinder plug and generating said control signal in dependence upon correspondence between said  
6 code and data borne by a key insertable within said keyway.

1 56. (previously presented) A lock, comprising:  
2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;  
4 a plug rotatable around said longitudinal axis while resident within said hollow recess;  
5 an elongate member interposed between said shell and said plug to travel generally  
6 along a radial direction between a first position where said elongate member obstructs rotation

7 between said shell and said plug by making a direct simultaneous engagement of both said shell and  
8 said plug, and in response to a torque that is externally applied to said plug and causes rotation of said  
9 plug within said shell, exiting said recess and traveling to a second position while maintaining a  
10 second simultaneous engagement of said shell and said plug that accommodates said rotation;

11 said plug comprising:

12 a first base perforated by an aperture, and a second base separated by an axial  
13 length of said plug from said first base, said second base bearing means for supporting a cam;

14 a logic circuit borne by said plug and rotatable with said plug, conveying said  
15 data signal between said aperture to said logic circuit; and

16 an electrical operator responding to said control signals by moving  
17 independently of said travel by said elongate member in a second direction within a plane that  
18 maintains said simultaneous engagement by not aligned with said radial direction between one  
19 of a first orientation obstructing said travel and relative operable movement between said shell  
20 and said plug while said electrical operator is contained wholly within said plug, and a second  
21 and different orientation accommodating said travel and said relative operable movement  
22 between said shell and said plug, and another of said first orientation and said second  
23 orientation.

1 64. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting a cam;

7 a sidebar interposed between said shell and said cylinder plug to travel generally along  
8 a radial plane between a first position engaging both said shell and said plug while obstructing  
9 rotation of said cylinder plug within said recess, and a second position accommodating said rotation;

10 a logic circuit generating an electrical control signal in response to a comparison



11 between a code set within said logic circuit and a data signal applied to said logic circuit;  
12 an electrical conductor provided by said plug, conveying said data signal to said logic  
13 circuit; and  
14 an electrical operator borne by said cylinder plug and rotatable with said plug, said  
15 electrical operator being electrically operable to respond to said control signal by moving in a  
16 different plane independently of said travel by said sidebar, between one of a first orientation  
17 providing obstruction of said travel and a second and different orientation accommodating said travel,  
18 and another of said first orientation and said second orientation;  
19 said sidebar having a first portion that is positioned to be optionally blocked by another  
20 component of said lock functioning independently of said electrical operator to prevent said travel  
21 of said sidebar, and a second portion that is positioned to be blocked from said travel by said sidebar  
22 to said second position whenever said electrical operator is within said first orientation, and a second  
23 portion that is positioned to be optionally blocked by another component of said lock.

1 65. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;  
4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting a cam;  
7 a bar interposed between said shell and said cylinder plug to travel generally along a  
8 radial plane between a first position engaging both said shell and said plug while obstructing rotation  
9 of said cylinder plug within said recess, and a second position accommodating said rotation;  
10 a logic circuit generating a control signal in response to a comparison between a code  
11 set within said logic circuit and a data signal applied to said logic circuit;  
12 an electrical conductor provided by said plug, conveying said data signal to said logic  
13 circuit; and  
14 an electrical operator comprising an armature, said armature being borne by said

15 cylinder plug and rotating transversely to longitudinal axis with said plug, said electrical operator  
16 being electrically operable to respond to said control signal by moving independently of said travel,  
17 between one of a first orientation providing obstruction of said travel and a second and different  
18 orientation accommodating said travel, and another of said first orientation and said second  
19 orientation.

1 66. (previously presented) The lock of claim 65, with said electrical operator further  
2 comprising a coil of an electrically conducting material that is borne by said cylinder plug and wound  
3 to drive said armature to move from one of said first and second orientations to the other of said first  
4 and second orientations in response to said control signal.

1 67. (previously presented) The lock of claim 65, with said electrical operator further  
2 comprising a coil of an electrically conducting material that is borne by said cylinder plug and wound  
3 to drive said armature to move from said first orientation to said second orientation in response to said  
4 control signal.

1 68. (previously presented) The lock of claim 65, with electrical operator further comprising  
2 a coil of an electrically conducting material that is borne by said cylinder plug and wound to drive  
3 said armature to rotate around an arc in response to said control signal.

1 69. (previously presented) The lock of claim 65, with said electrical operator further  
2 comprising a coil of an electrically conducting material that is borne by said cylinder plug and wound  
3 to drive said armature to reciprocate along a radial axis that is transverse to said radial plane in  
4 response to said control signal.

1 70. (previously presented) A lock, comprising:  
2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting a cam;  
7 a bar interposed between said shell and said cylinder plug to travel generally along a  
8 radial plane between a first position engaging both said shell and said plug while obstructing rotation  
9 of said cylinder plug within said recess, and a second position accommodating said rotation;  
10 a logic circuit generating said control signal in response to a comparison between a  
11 code set within said logic circuit and a data signal applied to said logic circuit;  
12 an electrical conductor provided by said plug, conveying said data signal to said logic  
13 circuit; and  
14 an electrical operator borne by said cylinder plug and rotatable with said plug, said  
15 electrical operator being electrically operable to respond to an electrical control signal applied to said  
16 electrical operator by moving along a geometrical construct other than to said radial plane between  
17 one of a first orientation providing obstruction of said travel and a second and different orientation  
18 accommodating said travel, and another of said first orientation and said second orientation.

1 75. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;  
4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting a cam;  
7 a bar interposed between said shell and said cylinder plug to travel generally along a  
8 radial plane between a first position engaging both said shell and said plug while obstructing rotation  
9 of said cylinder plug within said recess, and a second position accommodating said rotation;  
10 a logic circuit generating said control signal in response to a comparison between a  
11 code set within said logic circuit and a data signal applied to said logic circuit;  
12 an electrical conductor provided by said plug, conveying said data signal to said logic

13 circuit; and

14 an electrical operator borne by said cylinder plug and rotatable with said plug, said  
15 electrical operator being electrically operable to respond to said control signal by rotating around a  
16 radial axis that is transverse to said radial plane, between a first orientation providing obstruction of  
17 said travel and a second and different orientation accommodating said travel.

1 76. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting a cam;

7 a logic circuit generating said control signal in response to a comparison between a  
8 code set within said logic circuit and a data signal applied to said logic circuit;

9 an electrical conductor provided by said plug, conveying said data signal to said logic  
10 circuit;

11 an elongate bar exhibiting a greatest longitudinal dimension along a second axis that  
12 extends transversely to said first base and to said second base, said bar being interposed between said  
13 shell and said cylinder plug to travel generally along a radial axis that is transverse to said second  
14 axis, between a first position engaging both said shell and said plug while obstructing rotation of said  
15 cylinder plug within said recess, and a second position accommodating said rotation; and

16 an electrical operator borne by said cylinder plug and rotatable with said plug, said  
17 electrical operator being electrically operable to respond to said control signal by moving along said  
18 radial axis between one of a first orientation providing obstruction of said travel and a second and  
19 different orientation accommodating said travel, and another of said first orientation and said second  
20 orientation.

1 77. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting a cam;

7 a logic circuit generating said control signal in response to a comparison between a  
8 code set within said logic circuit and a data signal applied to said logic circuit;

9 an electrical conductor provided by said plug, conveying said data signal to said logic  
10 circuit;

11 an elongate bar exhibiting a greatest longitudinal dimension along a second axis that  
12 extends transversely to said first base and to said second base, said bar being interposed between said  
13 shell and said cylinder plug to travel generally along a radial axis that is radial to said cylinder plug  
14 and transverse to said second axis, between a first position engaging both said shell and said plug  
15 while obstructing rotation of said cylinder plug within said recess, and a second position  
16 accommodating said rotation; and

17 an electrical operator borne by said cylinder plug and rotatable with said plug, said  
18 electrical operator being electrically operable to respond to a control signal by moving between one  
19 of a first orientation providing obstruction of said travel and a second and different orientation  
20 accommodating said travel, and another of said first orientation and said second orientation.

1 90. (previously presented) A process of retrofitting a mechanical cylinder lock to form an  
2 electromechanical cylinder lock, the process comprising steps of:

3 providing a mechanical cylinder lock including an outer shell with a bore, a first rotatable  
4 barrel located in the bore, and a side bar for preventing and permitting rotation of the barrel within  
5 the bore in the shell;

6 removing the first barrel from the shell;

7 providing an electronically powered rotatable barrel having an exterior adapted to substantially  
8 correspond to the bore in the shell, and including:

9 at least one electromechanical locking member disposed in the barrel, the electromechanical  
10 locking member being positionable to permit the side bar to engage the locking member in a non-  
11 barrel blocking position which permits the barrel to rotate with respect to the shell, and the  
12 electromechanical locking member also being positionable in a barrel blocking position which blocks  
13 rotation of the barrel with respect to the shell; and

14 an electronically powered drive mechanism cooperating with the electromechanical locking  
15 member to selectively move the locking member from the barrel blocking position to the non-barrel  
16 blocking position in which the side bar engages the locking member to rotate the barrel and operate  
17 the lock; and

18 securing the electronically powered rotatable barrel in the bore in the shell to form an  
19 electromechanical cylinder lock, the lock including control means carried by at least one of the barrel  
20 and bore for energizing the electronically powered drive mechanism in response to an authorized  
21 attempt to open the lock.

1 91. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base perforated by a keyway and a second base  
6 separated by an axial length of said cylinder plug from said first base, said second base disposed to  
7 support a cam;

8 a bar interposed between said shell and said cylinder plug to reciprocate generally  
9 along a radial plane between a first position engaging both said shell and said plug while obstructing  
10 rotation of said cylinder plug within said recess, and a second position accommodating said rotation  
11 when a torque is externally applied to said keyway to rotate said cylinder plug within said shell;

12 a locking mechanism borne by and rotating with said cylinder plug, said locking  
13 mechanism being interposed between said cylinder plug and said bar, and exhibiting a first disposition  
14 hindering said reciprocation and, in response to insertion of a key in physical conformance to said

locking mechanism, exhibiting a second and different disposition accommodating said reciprocation;  
and

an electrical operator borne by said cylinder plug and rotatable with said cylinder plug,  
said electrical operator being electrically operable to respond to a control signal by moving  
independently of said bar between a first orientation providing obstruction of said reciprocation by  
said bar and a second and different orientation removing said obstruction.

92. (previously presented) A lock, comprising:

a shell containing a hollow recess defining a longitudinal axis and an interior  
cylindrical surface;

a cylinder plug rotatable around said longitudinal axis while resident within said  
hollow recess;

a bar interposed between said shell and said cylinder plug to extend generally along  
a radial plane between a first state engaging both said shell and said plug while obstructing rotation  
of said cylinder plug within said recess, and a second state accommodating said rotation;

said cylinder plug comprising:

a first base and a second base separated by an axial length of said cylinder plug from  
said first base, said second base configured to support a cam; and

an electrical operator having a distal base penetrated by a recess, said electrical  
operator being comprising an armature borne by said cylinder plug and rotatable with said  
cylinder plug, said electrical operator being electrically operable to respond to a control signal  
by moving said armature independently of said bar, between one of a first orientation  
providing obstruction of said rotation during said first state and a second orientation  
accommodating independent relative movement between said bar and said cylinder plug, and  
another of said first orientation and said second orientation.

93. (previously presented) The lock of claim 92, further comprised of:

a coil wound to provide conduction of an electrical current in response to said control

3 signal; and

4 said armature comprising an exterior surface exhibiting a rest position between said  
5 shell and said cylinder plug, said armature obstructing said rotation absent said conduction,  
6 accommodating said rotation during said conduction, and accommodating said rotation until said  
7 rotation returns said armature to said rest position after termination of said conduction.

1 94. (previously presented) The lock of claim 92, further comprised of:

2 a coil wound to provide conduction of an electrical current in response to said control  
3 signal; and

4 said armature comprising an exterior surface exhibiting a rest position with said  
5 exterior surface extending between said shell and said cylinder plug while said cylinder plug is in  
6 alignment with said shell in a locked condition, said armature obstructing said rotation absent said  
7 conduction, accommodating said rotation during said conduction by withdrawing from said shell and  
8 wholly into said cylinder plug, accommodating said rotation until said rotation returns said armature  
9 to said rest position after termination of said conduction, and resuming said rest position when said  
10 rotation restores said alignment.

1 95. (previously presented) The lock of claim 92, further comprised of:

2 a coil wound to provide conduction of an electrical current in response to said control  
3 signal; and

4 said armature comprising an exterior surface exhibiting a rest position between said  
5 bar and said cylinder plug, said armature obstructing said rotation absent said conduction, said  
6 armature accommodating said rotation during said conduction, and said armature accommodating said  
7 rotation until said rotation returns said armature to said rest position after termination of said  
8 conduction.

1 96. (previously presented) The lock of claim 92, further comprised of:

2 a coil wound to provide conduction of an electrical current in response to said control



3 signal; and

4           said armature comprising an exterior surface exhibiting a rest position with said first  
5 orientation while said exterior surface is interposed between said bar and said cylinder plug and  
6 obstructs said rotation absent said conduction, said armature assuming said second orientation,  
7 withdrawing from said interposition and accommodating said rotation during said conduction, and  
8 said armature accommodating said rotation until said rotation returns said armature to said rest  
9 position with said first orientation after termination of said conduction.

1           97. (previously presented) The lock of claim 92, further comprised of:

2           a coil wound to provide conduction of an electrical current in response to said control  
3 signal; and

4           said armature comprising an exterior surface exhibiting a rest position with said first  
5 orientation while said exterior surface is interposed between said bar and said cylinder plug and  
6 obstructs said rotation absent said conduction, said armature assuming said second orientation,  
7 withdrawing from said interposition and accommodating said rotation during said conduction, and  
8 said armature maintaining said second orientation and accommodating said rotation after said rotation  
9 returns said armature to said rest position after termination of said conduction.

1           98. (previously presented) The lock of claim 92, further comprised of:

2           a coil wound to provide conduction of an electrical current in response to said control  
3 signal; and

4           said armature comprising an exterior surface exhibiting a rest position with said first  
5 orientation while said exterior surface is interposed between said bar and said cylinder plug and  
6 obstructs said rotation absent said conduction, said armature assuming said second orientation,  
7 withdrawing from said interposition and accommodating said rotation during said conduction, said  
8 armature maintaining said second orientation and accommodating said rotation after said rotation  
9 returns said armature to said rest position after termination of said conduction, and said armature  
10 resuming said first orientation during renewal of said conduction subsequent to said termination.

1            99. (previously presented) The lock of claim 92, further comprised of:

2                    a coil wound to provide conduction of an electrical current in response to said control  
3 signal; and

4                    said armature comprising an exterior surface exhibiting a rest position while in said  
5 first orientation absent said conduction with a first thickness of said exterior surface interposed  
6 between said bar and said cylinder plug and with said cylinder plug in alignment with said shell in  
7 a locked position, said armature exhibiting said second orientation and accommodating said rotation  
8 during said conduction with a second and lesser thickness of said exterior surface permitting  
9 movement of said bar relative to said cylinder plug, and said armature accommodating said rotation  
10 until said rotation allows said bar to reverse said relative movement and said armature to return to said  
11 rest position after termination of said conduction.

1            100. (previously presented) The lock of claim 92, further comprised of:

2                    a logic circuit borne by said cylinder plug, generating said control signal in response  
3 to a comparison between a code set within said logic circuit and a data signal applied to said logic  
4 circuit; and

5                    said electrical operator moving between said second orientation and said first  
6 orientation in response to said control signal.

1            101. (previously presented) A lock, comprising:

2                    a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4                    a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising:

6                    a first base and a second base separated by a mass and an axial length of said cylinder  
7 plug from said first base, said second base being configured to support a cam, said mass  
8 comprising a main body exhibiting a major exterior circumferential surface and a cylindrical

9 sector exhibiting a lesser and minor exterior circumferential surface supplementing said main  
10 body to endow said cylinder plug with a substantially cylindrical exterior shape that is  
11 removably insertable within said hollow recess;

12 an electrical operator having a distal base penetrated by a recess, said electrical  
13 operator being encased within said cylindrical sector and rotatable with said cylinder plug,  
14 said electrical operator being electrically operable to respond to a control signal by moving  
15 said distal base between one of a first orientation obstructing rotation of said cylinder plug  
16 relative to said shell and a second and different orientation accommodating said rotation, and  
17 another of said first orientation and said second orientation; and

18 a logic circuit encased within said cylindrical sector generating said control signal in  
19 response to a comparison between a code set within said logic circuit and a data signal applied  
20 to said logic circuit.

1 102. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising:

6 a first base and a second base separated by a mass and an axial length of said cylinder  
7 plug from said first base, said second base bearing means for supporting a cam, said mass  
8 comprising a main body exhibiting a major exterior circumferential surface and a cylindrical  
9 sector forming a module exhibiting a lesser and minor exterior circumferential surface  
10 supplementing said main body to endow said cylinder plug with a substantially cylindrical  
11 exterior shape that is removably insertable within said hollow recess; and

12 an electrical operator having a distal base penetrated by a recess, said electrical  
13 operator being encased within and borne by said axial cylindrical sector and being rotatable  
14 with said cylinder plug, said electrical operator being electrically operable to respond to a  
15 control signal by moving said distal base between one of a first orientation causing obstruction

16 of rotation of said cylinder plug within said shell and a second orientation accommodating  
17 said rotation, and another of said first orientation and said second orientation;

18 a bar interposed between said shell and said cylinder plug, spaced-apart from said  
19 electrical operator and movable independently of said electrical operator between a first position  
20 obstructing said rotation and a second and different position accommodating said rotation.

1 103. (previously presented) The lock cylinder of claim 85, further comprising:  
2 said side bar comprises a major elongate surface that defines a plane extending  
3 approximately radially relative to said barrel; and  
4 said locking member moving on an axis that is approximately perpendicular to said  
5 plane.

1 104. (previously presented) The lock cylinder of claim 89, further comprising:  
2 a side bar that travels along a plane that extends approximately radially relative to said  
3 barrel; and  
4 said locking member moving on an axis that is approximately perpendicular to said  
5 plane.

1 105. (previously presented) The process of claim 90, further comprising:  
2 orienting said side bar to travel along a plane that extends approximately radially  
3 relative to said electronically powered rotatable barrel when engaging said locking member; and  
4 positioning said locking member to move on an axis that is approximately  
5 perpendicular to said plane when said locking member is selectively moved from said barrel blocking  
6 position to said non-barrel blocking position.

1 106. (previously presented) The lock of claim 14, further comprising said bar engaging both  
2 said shell and said plug during said movement between said plug and said cylinder.

1           108. (previously presented) The lock of claim 46, further comprising said bar engaging both  
2           said shell and said cylinder plug during said rotation.

1           109. (previously presented) The lock of claim 64, further comprising said sidebar engaging  
2           both said shell and said cylinder plug during said rotation.

1           111. (previously presented) The lock of claim 70, further comprising said bar engaging both  
2           said shell and said cylinder plug during said rotation.

1           112. (previously presented) The lock of claim 75, further comprising said bar engaging both  
2           said shell and said cylinder plug during said rotation.

1           113. (previously presented) ) The lock of claim 76, further comprising said bar engaging both  
2           said shell and said cylinder plug during said rotation.

1           114. (previously presented) The lock of claim 77, further comprising said bar engaging both  
2           said shell and said cylinder plug during said rotation.

1           115. (previously presented) The lock of claim 85, further comprising said side bar engaging  
2           both said shell and said barrel during said rotation.

1           116. (previously presented) The lock of claim 91, further comprising said bar engaging both  
2           said shell and said cylinder plug during said rotation.

1           119. (previously presented) The lock cylinder of claim 85, in which said side bar moves out  
2           of the cavity and engages the locking member to rotate the barrel and operate the lock.

1           120. (previously presented) A rotatable lock barrel for insertion into a lock cylinder having

2 a bore formed therein, the barrel comprising:

3 an elongated, generally cylindrically shaped barrel member having an exterior configured for  
4 receipt in a bore of a lock cylinder and an interior containing a plurality of electromechanical locking  
5 members, the barrel member having a recess formed therein;

6 wherein the locking members are disposed in the recess of the barrel member and are  
7 substantially entirely contained within the barrel member, each of the locking members including a  
8 groove and the locking members being movable to a position in which the grooves of the locking  
9 members are aligned;

10 the recess in said barrel member being configured to receive at least a portion of a movable  
11 side bar of a lock cylinder to permit the side bar to move into and out of engagement with the grooves  
12 of the locking members for selectively permitting and blocking rotation of the barrel member with  
13 respect to a lock cylinder when positioned therein;

14 an electronically powered drive mechanism located within the barrel member for moving the  
15 electromechanical locking members to a position in which the grooves of the locking members are  
16 aligned.

1 121. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess;

6 a detent interposed between said shell and said cylinder plug, said detent extending  
7 radially from a second recess within said shell into a passage within said cylinder plug to create an  
8 obstruction to rotation of said cylinder plug within said hollow recess;

9 said cylinder plug comprising:

10 a first base and a second base separated by an axial length of said cylinder plug from  
11 said first base, said second base configured to support a cam; and

12 an electrical operator borne by said cylinder plug and rotatable with said cylinder plug,

13        said electrical operator being electrically operable to respond to a control signal by moving  
14        independently of said detent between one of a first orientation accommodating relative  
15        movement between said detent and said cylinder plug and a second and different orientation  
16        maintaining obstruction of said relative movement by engaging said detent, and another of  
17        said first orientation and said second orientation.